UK METEOROLOGICAL OFFICE
GLOBAL DATA MONITORING REPORT

October 2003

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Exeter. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Exeter in time for inclusion into the appropriate analysis (the current cut-off time is approximately 7.2 hours after each analysis time). The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background) field, although to provide background values valid at the observation time for non-main hour data, time-interpolation of the T+3, T+6 and T+9 forecasts is used; and for sea surface temperature the background field is the analysis from the previous day. Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1and 2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or sea surface temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Exeter and assimilated into model runs. All data are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At the UK Met. Office, we monitor SYNOP pressure after it has been interpolated to our Global NWP Model's surface height. For most synoptic stations (about 75%), the surface pressure (at the model surface) is calculated from the reported station-level pressure, or, if this is not available, the height of a standard pressure-level (e.g. 850 hPa or 700 hPa). If neither of these are available, or if the reported station-level pressure is deemed unreliable, the reported mean sea-level pressure is used (about 25% of SYNOPs).

Aircraft observations

Tables 4A (300-150 hPa) and 4B (1000-301 hPa) contain lists of statistics calculated from data received from all airline carriers.

Figures 3A (300-150 hPa) and 3B (1000-301 hPa) show 10 degree lat/long box average numbers of aircraft reports in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS) received per day throughout the month at Exeter and assimilated into model runs. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4A-7A (300-150 hPa) and 4B-7B (1000-301 hPa) show wind statistics for AIREP/ASDAR in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS). Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Exeter and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-39 show sounding statistics from the polar orbitting satellite NOAA-15. Figure 25 shows the mean daily number of ATOVS soundings, and figures 26-39 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.

Figure		Weighting function peak (hPa)
26	Mean	Surface (HIRS8)
27	SD	Surface (HIRS8)
28	Mean	700 (HIRS15)
29	SD	700 (HIRS15)
30	Mean	500-700 (HIRS11)
31	SD	500-700 (HIRS11)
32	Mean	400 (HIRS4)
33	SD	400 (HIRS4)
34	Mean	700 (AMSUA5)
35	SD	700 (AMSUA5)
36	Mean	300 (AMSUA7)
37	SD	300 (AMSUA7)
38	Mean	100 (AMSUA9)
39	RMS	100 (AMSUA9)

Figures 40-54 show sounding statistics from the polar orbitting satellite NOAA-16. Figure 40 shows the mean daily number of ATOVS soundings, and figures 41-54 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.

Figure		Weighting function peak (hPa)
41	Mean	Surface (HIRS8)
42	SD	Surface (HIRS8)
43	Mean	700 (HIRS15)
44	SD	700 (HIRS15)
45	Mean	500-700 (HIRS11)
46	SD	500-700 (HIRS11)
47	Mean	400 (HIRS4)
48	SD	400 (HIRS4)
49	Mean	700 (AMSUA5)
50	SD	700 (AMSUA5)
51	Mean	300 (AMSUA7)
52	SD	300 (AMSUA7)
53	Mean	100 (AMSUA9)
54	RMS	100 (AMSUA9)

Figures 55-69 show sounding statistics from the polar orbitting satellite NOAA-17. Figure 55 shows the mean daily number of ATOVS soundings, and figures 56-69 show mean and standard deviation observation-background differences for brightness temperature for selected channels.

Figure		Weighting function peak (hPa)
56	Mean	Surface (HIRS8)
57	SD	Surface (HIRS8)
58	Mean	700 (HIRS15)
59	SD	700 (HIRS15)
60	Mean	500-700 (HIRS11)
61	SD	500-700 (HIRS11)
62	Mean	400 (HIRS4)
63	SD	400 (HIRS4)
64	Mean	700 (AMSUA5)
65	SD	700 (AMSUA5)
66	Mean	300 (AMSUA7)
67	SD	300 (AMSUA7)
68	Mean	100 (AMSUA9)
69	RMS	100 (AMSUA9)

N.B. All satellite sounding data is bias-corrected (and thinned) before being assimilated in the UKMO NWP model.

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Exeter during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Exeter in DRIFTER code during the month for the area 10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Exeter from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics (**Geopotential Height and Windspeed at 100 and 500 hPa**) for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. April 96. 500 km and 120 km SATEMs replaced by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS.
6. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.
7. Sept 97 Monitoring statistics for NOAA-12 removed. Figures 25-27 now show data for NOAA-11
8. January 1998. Increase in resolution of UKMO global forecast model.
9. April 1998. GOES winds ceased on 2nd March 1998, and were replaced with GOES high resolution winds from 15th.
10. June 1998. Monitoring statistics for Meteosat-6 were replaced by monitoring statistics for Meteosat-7, from 3rd June.
11. June 1998. Corrections in our processing of radiosonde data resulted in a decrease in the number of 500hPa geopotential heights in Figure 8 of about 230 per 24 hours (compared with previous reports), and a small increase in the number of 300hPa winds in Figure 9.
12. July 1998. Meteosat-5 began transmitting winds from 2nd July, at 63 degrees East (over the Indian ocean), and this data is included in the statistics.
13. July 1998. GOES-9 (at 135W) was replaced mid-month by GOES-10 (initially at 105W, moving towards 135W).
14. February 1999. Problems with NOAA-11, and TOVS data ceased to be assimilated from 26 February.
15. March 1999. UKMO introduced 3-D VAR assimilation system on 29 March, and also began assimilating ATOVS data from NOAA-15.
16. May 1999. Included statistics for ATOVS sounding data from NOAA-15.
17. September 1999. Included statistics for high resolution visible winds from Meteosat-5 and Meteosat-7.
18. October 1999. The 3-D VAR assimilation system was upgraded on 19 October, including improvements in the assimilation of ATOVS radiances, use of SSM/I surface wind speed, an improvement in the calculation of surface pressure for SYNOPs, and thinning and revision of observation errors of aircraft data.
19. November 1999. High resolution visible winds from Meteosat-5 and Meteosat-7 removed until used operationally.
20. April 2000. Aireps in Table 4 and Figures 3-7 split into ranges 300-150 hPa (A) and 1000-301 hPa (B).
21. September 2000. Corrected an error affecting the mean positions of a minority of buoys in Table 2.
22. November 2000. An error in the production of Table 6 was corrected. Previously, some sondes with suspect vector winds were being missed.
23. April 2001. Included statistics for ATOVS sounding data from NOAA-16.
24. May 2001. Included statistics for sea surface temperatures from marine surface observations.
25. December 2002. Included statistics for ATOVS sounding data from NOAA-17.
26. December 2002. Meteosat-7 and Meteosat-5 SATOB winds replaced by higher resolution BUFR-coded winds.

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: EXETER
MONTH: Oct 03

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours

Elements monitored
:Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (Degrees).
:Sea surface temperature (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:PGE :Percentage of observations with gross errors.

:%REJ :Percentage of observations flagged excluding those with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the wind observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT
:15 hPa (pressure)
:25 m s^{-1} (vector wind)
:10 degrees (sea surface temperature)

SELECTION CRITERIA :NOBS $\geq$ 20 , and one or more of the following:

1.|bias|
$\geq$ 4 hPa (pressure),
$\geq$ 5 m s^{-1} (wind speed),
$\geq$ 30 degrees (direction).
$\geq$ 3 degrees (sea surface temperature).

2.SD
$\geq$ 6 hPa (pressure),
$\geq$ 80 degrees (direction).
$\geq$ 5 degrees (sea surface temperature).

3.PGE $\geq$ 25

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
AVOSTEST	P	493	33	47	3.9	-5.0	6.3
CG2556	P	26	27	31	1.4	-10.2	10.3
ELXT9	P	38	0	11	1.8	5.4	5.7
KMJL	P	41	0	2	1.5	-4.1	4.3
OYYK2	P	56	0	39	2.5	4.6	5.2
TEST	P	37	76	100	3.3	-6.2	7.0
UCJB	P	44	0	0	0.8	-4.5	4.6
UCJL	P	45	0	0	1.2	4.3	4.5
UCUO	P	65	26	55	4.3	-3.8	5.7
V2AF4	P	44	0	36	0.8	4.4	4.5
ZCBD2	P	42	0	100	5.6	5.1	7.5
62166	P	56	0	100	4.4	5.0	6.7

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
HP6038	SPEED	221	0	2	3.2	5.1	6.0
KJLV	SPEED	54	0	2	3.2	5.5	6.4
UCJJ	SPEED	24	0	8	3.3	5.5	6.4
VEP717	SPEED	218	0	6	3.4	5.6	6.5
V2AR5	SPEED	61	0	51	3.3	6.9	7.7
V2EA4	SPEED	126	2	38	7.7	7.2	10.5
V2IA	SPEED	26	0	4	2.8	5.0	5.7
V2OH1	SPEED	22	0	9	4.0	6.2	7.3
WDA3588	SPEED	62	0	44	5.4	5.6	7.8
ZCDG4	SPEED	49	4	22	4.3	5.1	6.7
3FEI6	SPEED	66	0	100	3.0	5.7	6.4
3FJV4	SPEED	26	0	0	3.2	5.2	6.1

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
A3CK5	DIRN.	21	0	0	33.9	31.8	46.5
BBXX KS0	DIRN.	121	0	0	81.3	-1.4	81.3
HPJW	DIRN.	21	5	0	106.4	49.3	117.3
KS025	DIRN.	40	0	0	115.8	20.5	117.6
V2DX	DIRN.	24	0	0	32.0	39.0	50.5
ZSAF	DIRN.	54	2	0	84.7	-6.0	85.0
43011	DIRN.	22	0	0	33.8	40.7	52.9
9VGC4	DIRN.	35	0	0	80.4	29.1	85.5

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
AVOSTEST	SST	509	60	72	3.8	2.0	4.3
CGTF	SST	24	75	75	1.4	-0.2	1.4
CG2522	SST	333	98	100	1.0	4.2	4.3
CG8048	SST	57	98	100	0.0	0.8	0.8
DBBA	SST	676	27	27	0.7	0.0	0.7
DBBX	SST	596	31	100	1.4	0.4	1.4
DBBXX	SST	77	32	100	1.2	0.3	1.2
DHDH	SST	20	0	100	1.0	-3.0	3.2
DQVO	SST	26	4	100	0.9	3.2	3.3
EIQN	SST	664	75	100	0.9	-0.4	0.9
ELUO5	SST	22	0	73	1.7	-4.5	4.8
ELVO5	SST	73	0	36	0.6	3.3	3.4
ELXO4	SST	33	3	9	0.5	-3.1	3.2
ELZV9	SST	38	3	53	2.9	-4.0	4.9
H3YF	SST	21	0	67	1.7	5.1	5.4
KRHX	SST	50	0	100	1.7	-3.2	3.6
KS010	SST	119	40	40	1.0	-1.0	1.4
PDBY	SST	23	9	100	2.1	3.5	4.1
PHSG	SST	28	0	96	1.0	-5.3	5.4
PPSV	SST	29	0	55	2.3	-3.8	4.5
S6HU4	SST	21	33	100	3.4	-4.2	5.3
S6TS	SST	48	6	100	2.5	-3.2	4.1
TEST	SST	62	100	100			
UAJS	SST	33	45	61	2.9	-0.9	3.0

UBLX	SST	24	50	100	1.5	-7.1	7.2
UBSW	SST	22	0	77	1.7	-4.8	5.1
UCDN	SST	33	0	100	2.9	-3.3	4.4
UCJB	SST	42	0	100	1.7	-3.3	3.7
UCJO	SST	20	0	50	1.7	-4.3	4.6
UCMR	SST	20	5	35	1.2	-3.4	3.6
UCON	SST	38	3	100	2.5	-3.5	4.3
UFSZ	SST	61	0	100	0.5	-5.5	5.5
UHOM	SST	48	0	54	0.9	-3.3	3.4
UHRT	SST	66	0	64	1.0	-3.8	3.9
VCTX	SST	30	40	47	2.2	-1.0	2.4
VDLC	SST	53	6	60	2.7	-3.6	4.5
VGLZ	SST	25	100	100			
VGNW	SST	21	33	43	2.0	-0.9	2.2
V2AC6	SST	22	0	36	0.8	3.0	3.1
V2OH1	SST	23	0	61	1.8	-4.5	4.8
V7DN3	SST	28	0	100	2.7	-3.3	4.3
WCW9126	SST	42	74	100	0.8	0.4	0.8
WGJF	SST	41	2	41	2.1	-3.3	3.9
WWU8	SST	36	100	100			
YJQL3	SST	42	0	100	1.0	-4.2	4.3
ZCBU5	SST	29	0	100	0.5	3.1	3.1
ZCFL	SST	52	0	63	1.7	-3.0	3.5
ZMFR	SST	166	100	100			
3FJV4	SST	28	0	100	1.1	4.5	4.6
3FKM8	SST	36	0	67	2.1	-3.8	4.4
31056	SST	395	100	100			
44137	SST	684	0	65	1.2	3.4	3.6
45139	SST	671	0	92	1.8	-5.4	5.7
45140	SST	140	100	100			
45141	SST	496	43	100	1.7	8.8	9.0
45147	SST	690	100	100			
45148	SST	547	100	100			
45150	SST	575	23	100	1.7	8.7	8.9
45152	SST	123	100	100			
45159	SST	634	0	65	2.5	-4.6	5.3

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
45160	SST	537	12	100	1.5	-6.4	6.6
46131	SST	671	100	100			
46146	SST	684	100	100			
46181	SST	326	100	100			
9KKS	SST	33	3	100	1.7	-4.9	5.2

Figure 1. SHIP/SYNOP mean daily count. OCTOBER 2003
All hours
Global average number of observations in 24 hours = 20209

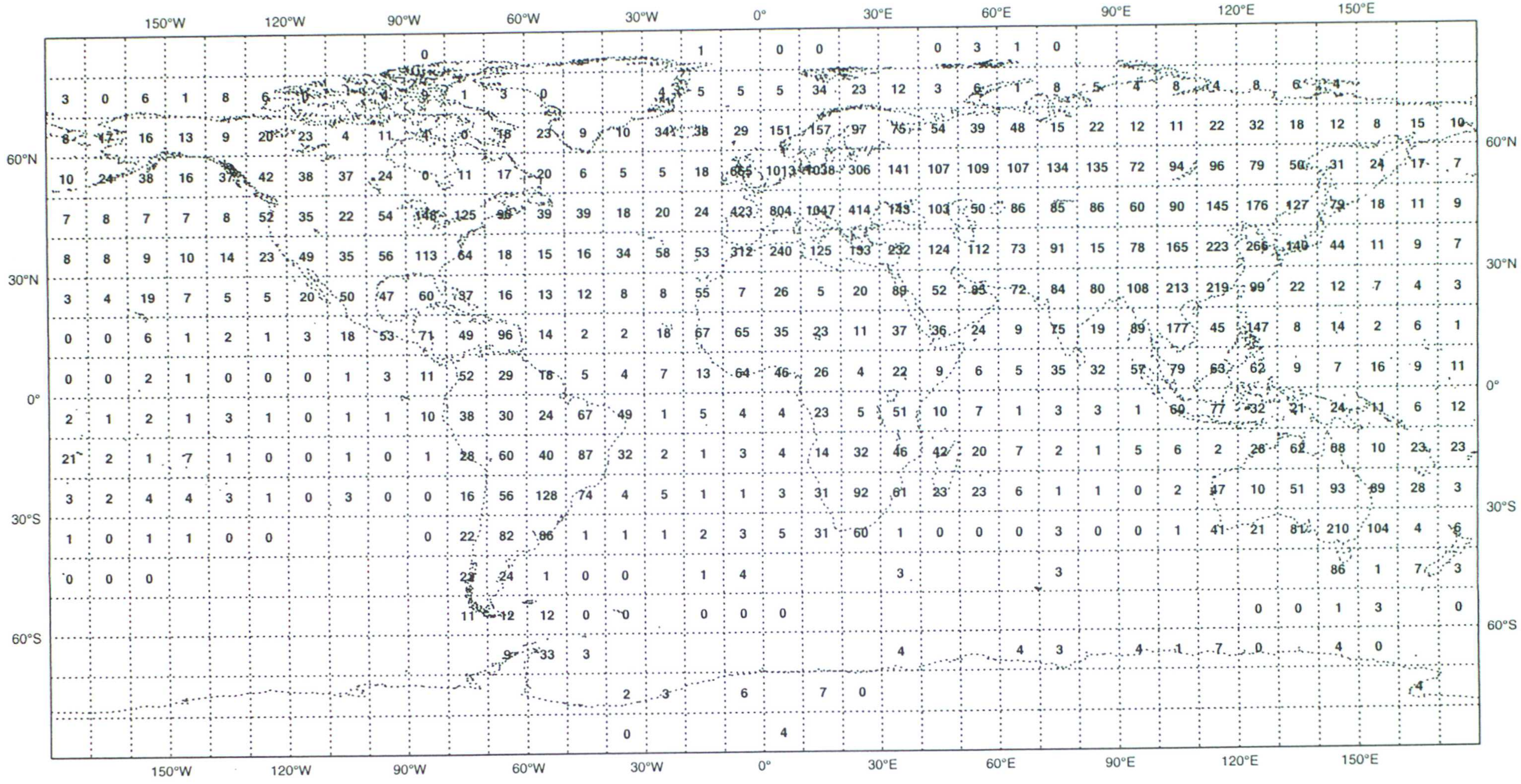

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: EXETER
MONTH: Oct 03

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for drifting buoys.

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times : All hours

Elements monitored
:Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (degrees).
:Sea surface temperature (degrees).

Parameters monitored

:NOBS	:Number of observations received excluding duplicates.
:PGE	:Percentage of observations with gross errors.
:%REJ	: Percentage of observations flagged excluding those with gross errors
:SD	:SD of difference of observations from background values excluding those with gross errors.
:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the wind observation is veered to the background.**
:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT	:15 hPa	(pressure)
	:25 m s^{-1}	(vector wind)
	:10 degrees	(sea surface temperature)

SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:	
	1.|bias|	≥ 4 hPa	(pressure),
		≥ 5 m s^{-1}	(wind speed),
		≥ 30 degrees	(direction).
		≥ 3 degrees	(sea surface temperature).
	2.SD	≥ 6 hPa	(pressure),
		≥ 80 degrees	(direction).
		≥ 5 degrees	(sea surface temperature).
	3.PGE	≥ 25.	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
17524	-44.5	-17.3	P	271	28	80	4.5	6.1	7.6
17653	-37.1	-12.3	P	125	0	90	1.3	-6.4	6.6
23597	4.4	73.6	P	110	2	55	2.7	5.0	5.7
42563	15.4	-67.6	P	38	97	97	0.0	4.6	4.6
42564	14.3	-74.9	P	63	100	100			
42565	17.5	-80.7	P	76	100	100			
42566	13.5	-68.8	P	32	100	100			
42567	14.4	-79.4	P	54	100	100			
56556	-24.3	69.9	P	84	7	62	3.7	5.7	6.8
61672	36.3	34.4	P	188	25	36	4.2	0.2	4.2

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
41631	25.6	-74.9	SPEED	74	0	100	4.2	6.7	7.8
41910	25.0	-68.1	SPEED	107	0	100	0.9	6.2	6.3
46781	53.2	-177.1	SPEED	74	1	100	6.5	7.3	9.8

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
41916	25.7	-60.5	DIRN.	27	0	0	14.0	31.5	34.5
41917	25.3	-64.2	DIRN.	23	0	0	23.4	37.1	43.9
46702	39.0	-150.3	DIRN.	189	2	0	47.4	-48.2	67.6

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
13615	18.1	-16.0	SST	50	0	86	1.1	4.1	4.2
17510	-24.0	83.2	SST	165	83	83	0.1	-0.7	0.7
22908	40.2	140.0	SST	59	5	71	2.9	-4.6	5.4
23928	14.9	50.3	SST	47	57	100	6.3	1.9	6.6
33502	-26.4	-17.6	SST	123	0	100	0.5	3.2	3.2
42562	14.4	-68.3	SST	50	78	94	2.6	-4.3	5.0
42563	15.2	-67.9	SST	65	80	95	2.6	-4.4	5.1
42564	14.3	-75.2	SST	118	69	95	3.1	-5.1	5.9
42565	17.8	-80.9	SST	127	73	99	2.0	-6.3	6.6
42566	13.6	-69.0	SST	65	83	97	2.7	-5.1	5.7
42567	14.5	-79.6	SST	92	65	95	2.6	-5.7	6.3
44507	41.5	-34.8	SST	20	100	100			
46626	44.6	-124.2	SST	274	0	73	3.2	-3.4	4.7
46628	44.6	-125.1	SST	76	30	100	0.4	9.4	9.4
46972	18.6	-162.8	SST	230	0	100	0.4	4.8	4.8
51769	13.8	147.9	SST	325	0	100	1.1	3.0	3.2
53576	20.5	123.7	SST	38	0	100	0.4	-5.4	5.4
53577	20.9	123.6	SST	36	0	100	0.4	-5.0	5.0
53578	22.3	123.6	SST	37	0	100	0.2	-5.8	5.9
53579	21.4	123.7	SST	37	0	100	0.3	-5.5	5.5
53580	20.8	123.7	SST	34	0	100	0.3	-5.1	5.1

Figure 2. DRIFTER mean daily count. OCTOBER 2003
All hours
Global average number of observations in 24 hours = 11018

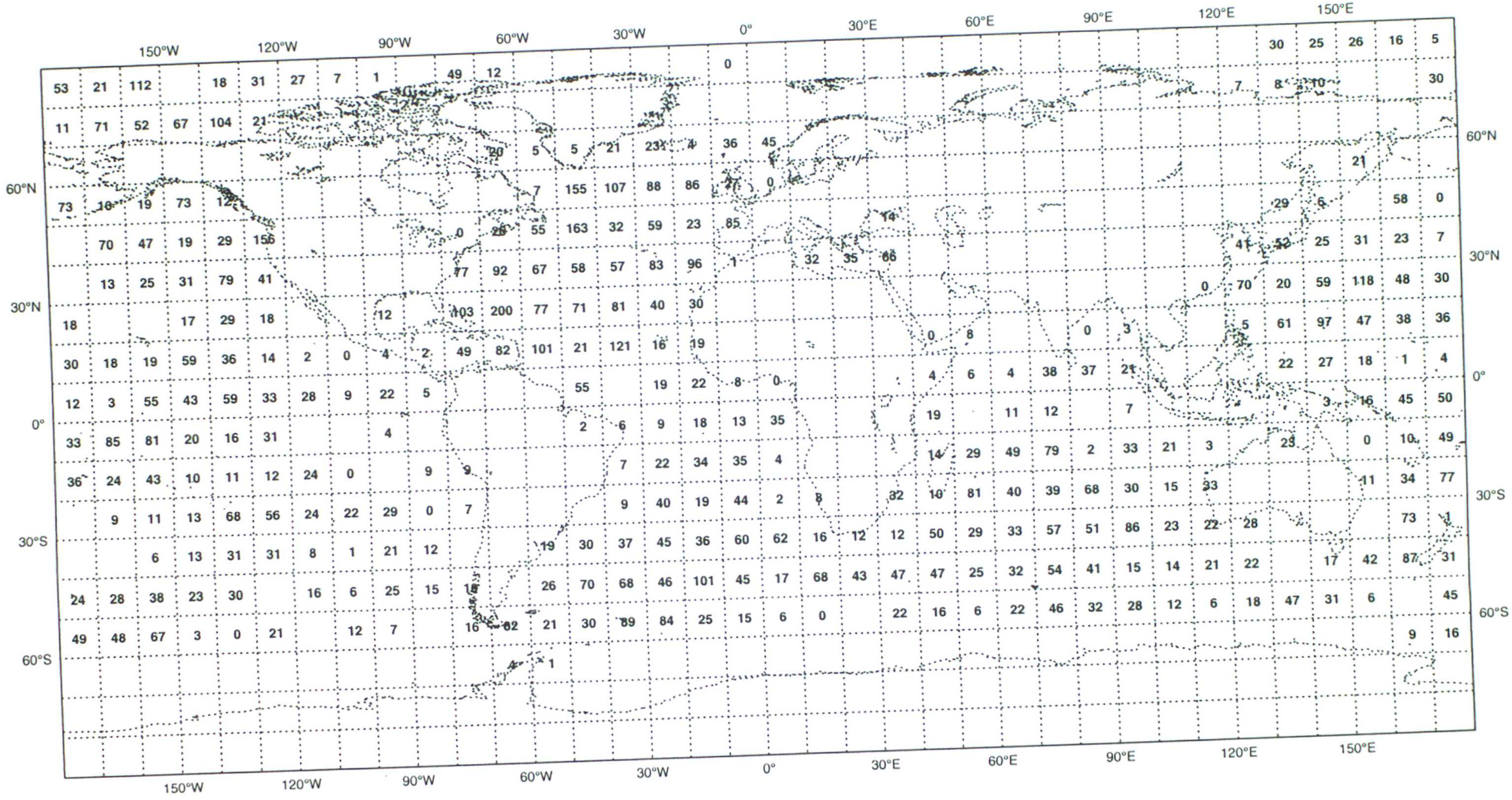

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: EXETER
MONTH: Oct 03

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Surface pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged excluding those with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.|bias|	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

SUSPECT SYNOPS (PRESSURE) BY WMO REGION OCT 200

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60320	35.9N	5.3W	2	MS	60	10	17	0	1.4	-9.0	9.1
60728	36.4N	10.7E	1	MS	81	0	0	0	0.8	-8.3	8.3
61492	16.1N	13.5W	18	MS	65	1	2	2	1.3	4.4	4.6
62056	32.8N	21.8E	625	M	43	1	2	0	1.0	-4.7	4.8
63801	4.9S	29.6E	882	S8	48	0	0	0	1.1	7.8	7.9
63881	8.0S	31.6E	1923	S	41	9	22	0	1.1	12.9	12.9
64654	8.4N	20.6E	510	MS	42	0	0	0	1.0	5.1	5.2
65355	9.8N	1.1E	342	MS	96	0	0	1	1.2	-13.2	13.3
66285	11.8S	19.9E	1357	8	25	16	64	0	0.4	14.5	14.5
68014	19.6S	18.1E	1411	S8	60	1	2	2	1.6	-6.5	6.7
68016	19.3S	12.7E	16	MS	52	0	0	0	1.0	4.2	4.3
68030	18.5S	25.6E	1071	S8	82	0	0	0	4.2	8.4	9.4
68038	20.5S	26.0E	903	8	77	0	0	0	0.9	4.2	4.3
68312	26.5S	18.1E	1067	S8	56	0	0	0	0.8	4.6	4.7
68338	26.9S	24.6E	1234	S8	53	53	100	0			
68396	26.5S	31.3E	641	S8	57	0	0	0	1.2	4.6	4.8
68575	30.0S	30.0E	1175	S8	111	111	100	0			

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
30554	54.5N	113.6E	995	MS	117	2	2	0	4.9	5.6	7.4
36982	41.9N	78.2E	3635	S7	114	1	1	1	0.8	6.2	6.3
38565	40.6N	65.7E	485	MS	117	59	50	0	1.4	-0.1	1.4
40435	24.5N	44.4E	991	MS	56	1	2	0	0.7	7.7	7.7
40700	39.6N	47.9E	45	MS	107	1	1	1	1.2	-5.5	5.6
40713	37.4N	46.3E	1475	MS	106	50	47	1	0.5	14.4	14.4
40741	36.5N	61.2E	235	MS	101	0	0	2	1.3	-4.7	4.9
40757	35.6N	53.4E	1171	MS	110	0	0	0	0.9	4.1	4.2
40780	33.6N	46.4E	1362	MS	105	0	0	1	0.9	5.4	5.5
41254	23.1N	57.6E	1755	S8	107	107	100	0			
41517	35.3N	75.7E	2180	8	52	0	0	25	2.1	-4.3	4.8
44265	46.1N	91.5E	1186	MS	109	0	0	0	1.3	5.1	5.3
44416	28.6N	81.6E	720	MS	27	0	0	0	0.9	4.9	5.0
47022	40.8N	128.2E	1224	M	90	2	2	3	1.5	4.3	4.6
47678	33.1N	139.8E	79	MS	117	0	0	64	0.9	-9.2	9.2
48924	21.1N	101.5E	644	M	36	1	3	31	0.9	10.9	10.9
48925	20.7N	102.0E	550	S	50	0	0	0	0.6	-10.1	10.1
48938	19.2N	101.7E	326	MS	48	25	52	0	3.3	13.7	14.1
50727	47.2N	119.9E	1028	MS	117	0	0	0	0.7	4.2	4.3
51495	43.2N	91.7E	874	M	113	0	0	0	1.5	7.5	7.6
52866	36.6N	101.8E	2262	S	116	0	0	0	1.1	-4.0	4.1
56462	29.0N	101.5E	2994	S	117	0	0	0	1.3	8.2	8.3
56768	25.0N	101.5E	1773	S	117	0	0	0	0.5	-5.4	5.4
57816	26.6N	106.7E	1074	MS	117	112	96	0	0.1	-14.7	14.7

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
82181	2.0S	54.1W	146	MS	83	1	1	2	1.1	6.4	6.5
82445	4.3S	55.6W	45	MS	83	0	0	1	0.8	4.2	4.3
82704	7.6S	72.7W	170	MS	78	0	0	0	0.9	-4.1	4.2
82765	7.3S	47.5W	193	MS	84	0	0	0	0.8	4.2	4.3
83235	12.4S	46.4W	604	MS	87	0	0	2	1.2	7.2	7.3
83319	14.7S	52.4W	315	MS	84	0	0	0	1.2	4.6	4.8
83332	14.1S	46.4W	826	MS	87	60	69	0	0.6	14.3	14.3
83470	17.9S	50.9W	727	MS	85	0	0	0	0.9	-5.0	5.1
83531	18.6S	46.5W	940	MS	86	0	0	0	0.8	-6.1	6.2

83738	22.5S	44.5W	440	MS	51	0	0	6	1.4	-8.6	8.7
83836	25.5S	50.6W	837	MS	87	0	0	0	0.8	-5.3	5.4
84401	5.2S	80.6W	49	MS	114	0	0	0	0.8	4.1	4.2
84425	5.9S	76.1W	179	MS	26	0	0	0	1.1	4.5	4.6
84455	6.5S	76.4W	281	MS	87	0	0	1	1.7	7.6	7.8
84472	7.1S	78.5W	2620	S	54	0	0	0	0.8	-5.7	5.8
84474	7.2S	76.7W	350	S	26	1	4	4	1.1	8.8	8.9
84686	13.6S	72.0W	3248	S	113	1	1	1	1.0	-5.1	5.2
84688	13.7S	73.4W	3444	S	49	1	2	0	0.4	-12.7	12.7
84720	14.9S	75.0W	567	MS	55	0	0	2	1.8	5.1	5.4
84782	18.1S	70.3W	468	MS	89	0	0	0	1.2	8.3	8.4
85140	14.3S	67.4W	140	MS	58	0	0	0	0.9	6.8	6.9
85264	18.5S	64.1W	1998	S	56	0	0	0	1.5	-6.0	6.2
85312	19.8S	63.9W	992	S	43	1	2	0	1.9	-10.9	11.1
85406	18.3S	70.3W	55	M	117	0	0	0	0.9	4.7	4.8
85432	22.5S	68.9W	2320	S8	81	0	0	0	0.6	4.8	4.8

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
71048	61.6N	125.8W	610	MS	116	0	0	4	1.4	5.6	5.8
71049	66.0N	91.8W	150	MS	109	82	75	0	1.4	13.6	13.7
71181	47.1N	55.3W	29	MS	112	0	0	0	0.9	-6.1	6.2
71408	47.4N	55.8W	35	MS	113	0	0	0	1.0	-5.2	5.3
71475	49.3N	124.8W	2	MS	117	0	0	0	1.1	-8.1	8.2
71747	48.8N	91.6W	424	MS	115	0	0	0	0.6	4.0	4.0
72327	36.1N	86.7W	182	MS	114	0	0	0	0.6	4.1	4.1
76055	31.0N	114.9W	440	MS	68	68	100	0			
76543	22.0N	98.8W	104	MS	30	0	0	0	0.8	6.6	6.6
76658	19.2N	103.7W	494	MS	29	0	0	0	0.7	5.6	5.6
76762	17.5N	99.5W	1265	MS	77	1	1	1	1.1	5.3	5.4
76903	14.9N	92.3W	118	MS	83	0	0	0	0.8	5.9	6.0
78588	17.2N	87.5W	-270	M	118	105	89	0	0.7	0.1	0.7
78627	15.3N	91.5W	1901	MS	20	2	10	10	3.4	4.1	5.3
78655	14.0N	89.6W	725	S	25	0	0	0	0.5	8.2	8.2

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
92010	6.1S	145.4E	1587	M	37	0	0	3	1.4	9.4	9.5
94130	14.8S	131.9E	120	MS	117	0	0	0	1.2	4.9	5.0
96505	3.7N	115.7E	-9999	8	40	39	98	0	0.0	0.4	0.4
97378	10.7S	123.1E	1	MS	33	32	97	0	0.0	-14.8	14.8

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
01360	61.9N	7.9E	711	MS	117	0	0	0	0.9	6.3	6.4
06605	47.1N	7.1E	1599	S8	116	0	0	17	1.1	-4.3	4.4
06685	47.0N	9.1E	515	MS	116	0	0	6	1.2	6.9	7.0
08912	42.9N	0.8W	1434	MS	245	245	100	0			
08922	42.8N	0.2W	1660	MS	248	248	100	0			
10850	48.8N	10.7E	457	MS	348	0	0	0	0.5	-5.6	5.6
11116	47.5N	10.8E	870	MS	57	2	4	0	0.7	4.6	4.7
13269	44.3N	19.9E	176	MS	115	1	1	1	0.8	7.8	7.8
14554	44.9N	18.4E	136	S	55	3	5	2	0.7	-13.4	13.4
16538	40.1N	9.3E	1022	S	43	0	0	0	0.9	8.8	8.8
17203	38.9N	40.5E	1177	S8	116	0	0	0	1.0	4.9	5.0
17310	36.6N	32.0E	6	M	111	29	26	0	0.6	-0.4	0.7

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89004	71.7S	2.8W	815	MS	99	0	0	0	1.5	-7.5	7.6
89263	66.0S	66.1W	20	M	263	90	34	0	10.0	3.8	10.7
89264	71.4S	68.9W	780	S	272	0	0	0	1.2	6.3	6.4
89272	75.0S	70.8W	1395	S	256	256	100	27			
89512	70.8S	11.8E	140	MS	116	0	0	0	1.4	-4.3	4.5
89610	65.9S	113.1E	90	S	261	0	0	0	1.4	-7.9	8.0
89614	66.6S	111.2E	500	S	269	269	100	0			
89661	73.1S	169.6E	200	S	36	0	0	11	1.5	5.4	5.6
89666	76.7S	163.0E	200	S	33	33	100	9			
89744	74.0S	43.1E	3353	S	274	0	0	0	0.8	7.5	7.5
89811	66.7S	112.8E	1366	S	267	0	0	0	1.3	-4.6	4.8
89868	79.9S	170.0E	60	S	275	0	0	0	1.3	-4.3	4.5

TABLE 4A

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Oct 03

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Statistics for each airline carrier.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:All hours combined.
Level(s) monitored		:300.0 - 150.0 hPa
Elements monitored		:TEMP in °C ; WIND in m s^{-1}
Parameters monitored	:N REP.	:Number of observations received excluding duplicates.
	:PG	:Percentage of observations with gross errors.
	:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
	:PC	:Percentage of observations with calm winds.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.
GROSS ERROR LIMITS		:10.0 °C ; 60 m s^{-1} Vector Wind
SELECTION CRITERIA		:N REP ≥ 20

NB : All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS".

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAH	2814	0	38	1.4	0.2	2774	0	38	0	5.6	0.6
AAL	5710	0	33	1.5	0.3	5478	0	34	0	6.1	0.5
AAR	1303	0	5	1.6	-0.4	1309	1	6	0	7.6	0.3
ACA	2431	0	5	1.6	-0.1	2241	0	6	0	7.4	0.2
ACI	59	0	19	1.2	0.5	61	0	20	0	8.3	-0.2
AEA	1315	0	2	1.6	0.3	760	0	3	0	7.6	0.3
AEL	446	0	14	2.3	0.6	357	1	10	0	7.3	0.7
AEW	64	0	2	1.7	-0.7	64	0	9	0	11.0	0.7
AFL	575	1	5	1.7	0.4	527	1	6	0	9.1	0.6
AFR	1431	0	7	1.4	0.2	1136	0	9	0	7.1	0.3
AIS	221	1	8	1.7	0.5	198	1	11	0	10.1	-0.1
AJM	407	0	4	1.4	-0.2	366	0	5	0	6.0	0.2
AJX	506	0	6	1.5	0.5	504	0	7	0	7.5	0.5
AMM	156	1	3	1.5	0.4	131	0	7	0	8.4	-0.2
AMT	1330	0	40	0.9	-0.1	1315	0	40	0	5.3	0.6
AMX	386	1	5	1.6	0.3	310	1	7	0	10.5	-0.6
ANA	43	0	9	1.9	0.2	43	0	9	0	6.2	-0.6
ANZ	4514	0	26	1.4	0.0	4506	0	26	0	6.7	0.6
ARG	49	6	16	2.1	0.6	33	0	18	0	11.0	1.7
ATN	171	1	100	3.7	-1.9	175	0	18	0	8.8	2.1
AUA	25	0	20	4.0	2.0	25	0	0	0	5.3	0.7
AVA	263	0	5	1.8	0.9	156	0	6	0	7.9	0.7
AVN	110	0	46	1.2	0.4	110	0	47	0	7.0	0.3
AXF	30	0	30	3.4	0.6	30	0	27	0	5.6	0.6
AZA	619	4	17	2.9	1.0	496	1	6	0	8.7	0.1
BAF	28	0	0	1.7	-0.9	28	0	7	0	12.8	0.4
BAL	245	0	10	1.4	0.3	222	0	10	0	7.1	-0.1
BAW	837	0	12	1.6	-0.4	783	0	13	0	7.4	0.3
BBR	190	1	3	1.4	0.3	108	0	2	0	7.9	2.5
BPA	196	28	83	5.8	4.6	165	0	15	0	11.6	-0.2
BWA	307	1	7	1.5	-0.1	217	0	6	0	6.7	1.0
CAL	70	0	7	2.2	0.6	67	1	7	0	8.1	0.2
CCA	343	1	19	2.5	0.2	372	1	26	0	14.2	-0.5
CES	175	2	7	1.8	0.1	177	0	10	0	11.1	1.6
CFC	33	0	3	1.4	-0.1	32	0	16	0	10.5	2.5
CFG	764	0	4	1.4	-0.1	675	0	5	0	7.0	0.0
CKK	99	0	5	1.4	-0.2	101	3	9	0	7.8	0.4
CKS	393	1	28	1.4	0.6	390	0	28	0	7.3	0.6
CLX	402	0	5	1.7	-0.6	338	0	6	0	7.7	-0.1
COA	171	1	37	1.7	0.4	135	0	36	0	9.7	0.4
CPA	26	0	31	1.1	0.5	28	0	32	0	7.3	0.4
CRL	420	0	5	1.5	0.7	320	1	6	0	8.4	0.6
CSN	126	2	16	2.0	0.4	131	0	18	0	12.0	0.4
CUB	167	2	4	1.7	0.0	141	0	2	0	7.1	0.3
DAL	2896	0	32	1.4	-0.2	2688	0	35	0	6.3	0.2
DBR	24	0	4	1.7	-0.6	24	0	4	0	5.5	0.8
DCE	200	2	10	1.4	-1.0	185	0	12	0	9.3	-0.4
DCS	30	0	10	1.2	-0.4	29	0	21	0	13.7	0.6
DHL	119	0	100	6.7	-6.6	120	0	100	0	9.2	0.7
DLH	1174	0	13	1.5	-0.2	1119	1	14	0	7.3	0.7
EDW	79	3	6	1.3	0.0	71	0	7	0	10.6	0.4
EEZ	74	0	12	1.9	0.5	56	0	9	0	6.1	1.3
EIA	449	4	22	2.6	1.1	442	1	100	0	17.1	3.9
EIN	53	0	8	1.7	0.3	51	0	20	0	9.9	0.8
ELY	240	0	4	1.6	0.2	240	0	4	0	5.9	0.3
EVA	94	2	9	1.7	0.0	107	2	8	0	7.1	0.6
FDX	2012	1	38	1.4	0.3	1994	0	38	0	7.7	0.2
FIN	234	0	5	1.7	0.0	228	0	6	0	6.3	0.3
FJI	846	2	41	1.7	0.8	838	0	41	0	7.4	0.1

		TEMPERATURE					WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
FOM	688	1	34	1.4	0.0	682	0	34	0	7.3	0.9
GAF	48	0	4	2.0	-1.2	45	0	4	0	5.8	0.3
GCO	307	0	8	1.3	0.1	309	1	10	0	9.7	0.8
GHA	27	0	11	2.2	-0.2	23	0	17	0	17.3	-0.2
GRL	68	0	3	2.4	1.0	66	0	0	0	5.2	1.5
GTI	299	1	20	2.2	0.8	300	1	15	0	9.3	0.2
HAL	4256	0	37	1.1	0.0	4194	0	37	0	5.7	0.6
HBI	28	0	18	3.5	2.2	30	0	10	0	9.6	2.2
HLN	98	0	1	1.2	-0.7	87	0	2	0	6.5	1.0
HRH	152	1	54	1.0	0.0	153	1	52	0	5.0	0.7
IBE	3143	1	5	1.5	0.2	2045	0	7	0	8.5	0.5
ICE	930	0	10	1.6	-0.2	907	1	8	0	10.2	0.3
IWD	389	1	6	1.5	0.1	281	0	4	0	6.1	0.4
JAA	78	0	5	1.8	1.3	77	0	6	0	7.2	3.4
JAL	2882	0	4	1.7	0.6	2839	0	5	0	7.8	0.2
JAZ	690	0	5	1.6	1.1	681	0	5	0	7.5	0.6
JBU	28	4	4	0.5	0.2	27	0	0	0	5.0	-0.3
KAL	2350	1	9	1.8	0.0	2334	1	9	0	8.8	0.1
KLM	1612	0	4	1.6	0.2	1378	0	6	0	7.3	0.6
LAN	521	0	6	1.9	-0.5	521	0	6	0	6.0	1.4
LAP	76	0	45	2.2	0.8	75	0	41	0	8.1	0.5
LDA	26	0	4	1.0	0.6	24	0	8	0	7.6	1.1
LDI	403	3	39	4.7	3.1	289	0	6	0	9.0	0.1
LNE	76	3	12	2.1	-0.1	51	0	8	0	11.4	2.0
LOB	22	0	32	2.0	0.1	22	0	27	0	5.5	-0.3
LOT	116	1	3	1.5	-1.0	112	2	6	0	9.5	0.4
LTU	812	0	3	1.4	0.0	661	0	4	0	6.6	0.7
LXR	25	0	0	1.1	0.6	20	0	5	0	7.2	-0.2
MAS	271	0	6	1.8	0.4	275	1	8	0	9.5	0.3
MKA	24	0	8	1.4	0.9	24	0	17	0	10.8	1.9
MON	134	1	24	3.5	1.9	110	0	7	0	7.9	0.5
MPD	275	0	6	1.9	0.7	189	1	5	0	6.5	0.8
MPH	705	0	3	1.5	-0.7	652	0	3	0	7.0	0.1
MYT	396	0	4	1.3	0.0	353	0	4	0	7.4	0.2
NAO	240	0	31	1.1	-0.1	241	0	30	0	5.3	0.6
NCA	1018	0	3	1.7	0.3	825	0	4	0	7.2	0.0
NWA	7300	0	9	1.6	0.3	7241	0	10	0	8.1	0.2
NZL	2867	0	11	1.5	-0.5	2867	0	10	0	5.6	1.2
OAE	606	1	35	0.9	-0.2	598	0	40	0	9.1	1.2
PAC	571	0	11	1.8	0.1	573	0	14	0	9.2	-0.3
PAL	1166	0	10	1.6	0.4	1100	0	11	0	8.7	0.7
PAO	274	0	50	1.3	0.4	274	0	50	0	5.7	0.2
PLM	274	0	5	1.6	0.7	148	0	5	0	7.5	0.3
QFA	3570	0	48	1.3	0.1	3554	0	48	0	5.5	0.1
QQA	44	9	52	2.2	0.0	44	0	48	0	8.1	-0.7
RAF	29	0	14	1.2	0.1	29	3	14	0	8.6	1.7
RAM	274	2	4	1.6	0.4	168	0	5	0	8.1	0.3
RCH	364	2	21	3.3	0.1	286	0	15	0	12.4	1.7
RRR	105	8	17	2.3	-0.2	100	0	11	0	8.6	0.2
RZO	396	1	4	1.6	-0.5	189	0	5	0	7.5	0.4
SAA	368	1	4	1.4	-0.5	288	0	5	0	9.3	1.1
SEU	138	1	7	1.7	0.1	127	0	7	0	7.5	0.6
SIA	273	0	3	1.4	0.2	273	0	3	0	5.0	0.1
SLR	273	1	11	1.5	-0.1	254	1	12	0	8.0	-0.2
SQC	42	0	2	1.5	0.1	42	0	0	0	4.7	0.9
SVA	36	3	11	1.9	0.3	37	0	8	0	6.1	-0.2
TAG	24	0	13	2.4	1.3	20	0	15	0	11.1	0.7
TAP	486	1	5	1.4	-0.1	200	0	10	0	8.2	0.8
TCX	107	0	4	1.1	0.4	93	0	4	0	5.7	1.0

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
THA	95	0	6	1.5	0.1	95	0	5	0	8.1	-0.1
THT	147	2	33	1.7	-0.2	136	1	32	0	7.5	0.5
TPA	27	0	0	0.9	0.3	25	0	0	0	6.0	-0.8
TSC	163	1	6	1.8	-0.4	140	0	6	0	9.5	1.2
UAE	390	0	3	1.5	0.2	390	0	2	0	4.9	0.5
UAL	121755	0	91	1.0	-0.2	121745	0	91	0	5.0	0.6
UPS	2010	0	54	1.4	0.2	1986	0	55	0	7.4	0.1
USA	60	2	3	1.0	0.2	50	0	4	0	6.6	0.2
VIR	271	0	3	1.6	-0.1	261	0	4	0	8.5	0.3
VRG	116	3	28	2.3	1.1	117	0	100	0	10.5	1.4
VVJ	20	10	20	2.2	-0.6	24	0	17	0	7.0	2.4
VVR	47	9	23	2.2	0.5	42	0	19	0	5.7	0.4
WOA	528	0	9	1.2	0.1	506	0	14	0	9.2	0.1
YSS	93	1	17	2.6	1.6	65	0	9	0	7.2	1.0

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AU	40605	0	10	1.2	0.4	40664	0	10	0	5.1	0.4
EU	164161	0	23	1.3	0.3	164161	0	22	0	4.8	0.5
HL	24	0	8	2.4	0.0	22	0	5	0	6.1	1.2
KL	2894	0	6	1.1	0.6	2892	0	6	0	5.3	0.4
MK	3120	0	68	1.6	1.3	3100	0	6	0	6.7	1.3
SA	4175	0	46	1.8	1.2	3966	0	6	0	6.1	0.7
TN	29	0	21	2.6	1.6	30	0	13	0	6.7	1.4

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
N	968	3	20	2.2	0.7	958	0	19	0	7.1	1.0
US ACARS	848606	0	62	1.2	0.3	848601	0	62	0	5.2	0.6

TABLE 4B

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Oct 03

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :1000.0 – 300.1 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

NB : All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS".

		TEMPERATURE				WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	28	0	14	0.8	0.1	24	0	21	0	12.9	-2.5
AFR	97	2	5	1.2	-0.2	86	0	6	0	8.3	-0.5
ANZ	152	2	28	1.4	-0.3	154	0	26	0	5.1	-0.2
AVN	25	0	52	2.4	-0.9	25	0	48	0	6.3	3.2
AXF	48	0	63	0.7	0.1	51	0	63	0	4.3	-0.7
AZA	37	5	16	2.0	0.4	36	3	17	0	10.5	1.3
CFC	45	2	9	1.5	0.1	36	6	8	0	6.8	0.9
CKS	32	6	6	1.1	0.0	32	3	6	0	6.2	-0.2
DAL	101	1	36	1.6	-0.5	100	0	36	0	5.1	-0.2
DLH	218	0	10	1.9	-0.2	209	0	11	0	8.4	0.4
FDX	388	1	31	1.4	0.3	396	1	32	0	9.2	0.4
FIN	31	0	6	1.4	0.4	30	0	10	0	10.4	4.3
GAF	32	3	3	1.0	0.1	27	0	0	0	5.0	0.4
GCO	68	0	3	1.1	0.4	67	0	4	0	7.2	0.6
HAL	94	0	34	1.8	-0.6	92	0	35	0	10.0	-0.5
ICE	95	0	20	2.5	-1.0	92	1	5	0	12.0	-0.2
JAA	47	0	15	2.7	0.2	42	0	10	0	7.1	3.0
JAL	69	0	3	1.8	0.6	71	0	4	0	9.7	1.4
JAZ	31	0	6	2.0	0.8	32	0	6	0	5.8	1.2
KAL	50	0	18	2.4	-0.1	48	0	19	0	8.5	1.1
KIW	29	0	31	2.8	0.9	28	4	32	0	8.4	0.6
KLM	48	0	0	1.6	-0.5	41	0	0	0	7.2	0.3
LAN	31	0	0	1.0	0.3	32	0	0	0	5.6	0.9
MPH	58	2	3	1.3	-0.1	55	0	5	0	9.1	-0.9
MYT	27	0	4	1.2	-0.1	26	0	8	0	6.7	0.9
NCA	110	1	3	2.3	0.2	84	0	4	0	7.1	0.4
NWA	297	1	6	1.5	0.2	298	0	6	0	8.4	-0.8
NZL	16026	0	53	1.2	0.2	16026	0	54	0	4.9	0.1
OAE	26	0	38	0.7	-0.3	24	4	46	0	8.2	1.3
PAC	47	0	4	1.3	0.0	49	0	6	0	6.9	0.0
QFA	172	2	40	1.6	-0.1	182	0	39	0	7.9	0.8
RCH	41	5	27	3.8	-0.8	39	0	23	0	13.8	-0.5
RRR	183	7	26	3.4	2.0	173	0	21	0	12.0	1.0
SAA	53	6	11	1.7	-0.5	52	0	8	0	9.3	-1.3
SIA	35	0	0	0.8	0.1	36	0	0	0	4.5	0.4
SKI	24	4	54	2.6	1.2	28	4	32	0	10.5	2.1
UAE	32	0	0	0.8	0.3	32	0	0	0	5.0	-0.2
UAL	246531	0	97	1.1	0.0	246188	0	97	0	4.2	0.3
UPS	145	0	40	1.3	-0.3	141	1	40	0	7.1	0.4
VDA	24	4	13	1.1	0.1	24	8	21	0	9.4	2.7
VVP	70	1	46	2.8	1.1	68	0	41	0	6.6	0.7
VVR	25	0	28	2.1	-0.9	25	0	24	0	4.0	1.1
WOA	128	1	4	1.6	0.0	120	0	5	0	9.5	1.5

		TEMPERATURE				WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AU	35931	0	52	1.1	0.2	35968	0	52	0	4.3	0.0
EU	623155	0	69	1.0	0.2	623015	0	68	0	3.9	0.0
KL	1932	0	56	1.6	0.4	1927	0	56	0	5.0	0.1
MK	1879	0	84	1.3	0.6	1851	0	52	0	4.3	0.4
SA	2913	0	74	1.7	0.5	2769	0	61	0	5.0	0.2

		TEMPERATURE				WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
US ACARS	1607128	0	78	1.1	0.3	1601575	0	78	0	4.1	0.3

Figure 3a. AIRCRAFT 300 - 150 hPa mean daily count. OCTOBER 2003
Observations with O-B vector difference greater than 60 ms-1 excluded
Global average number of observations in 24 hours = 40824

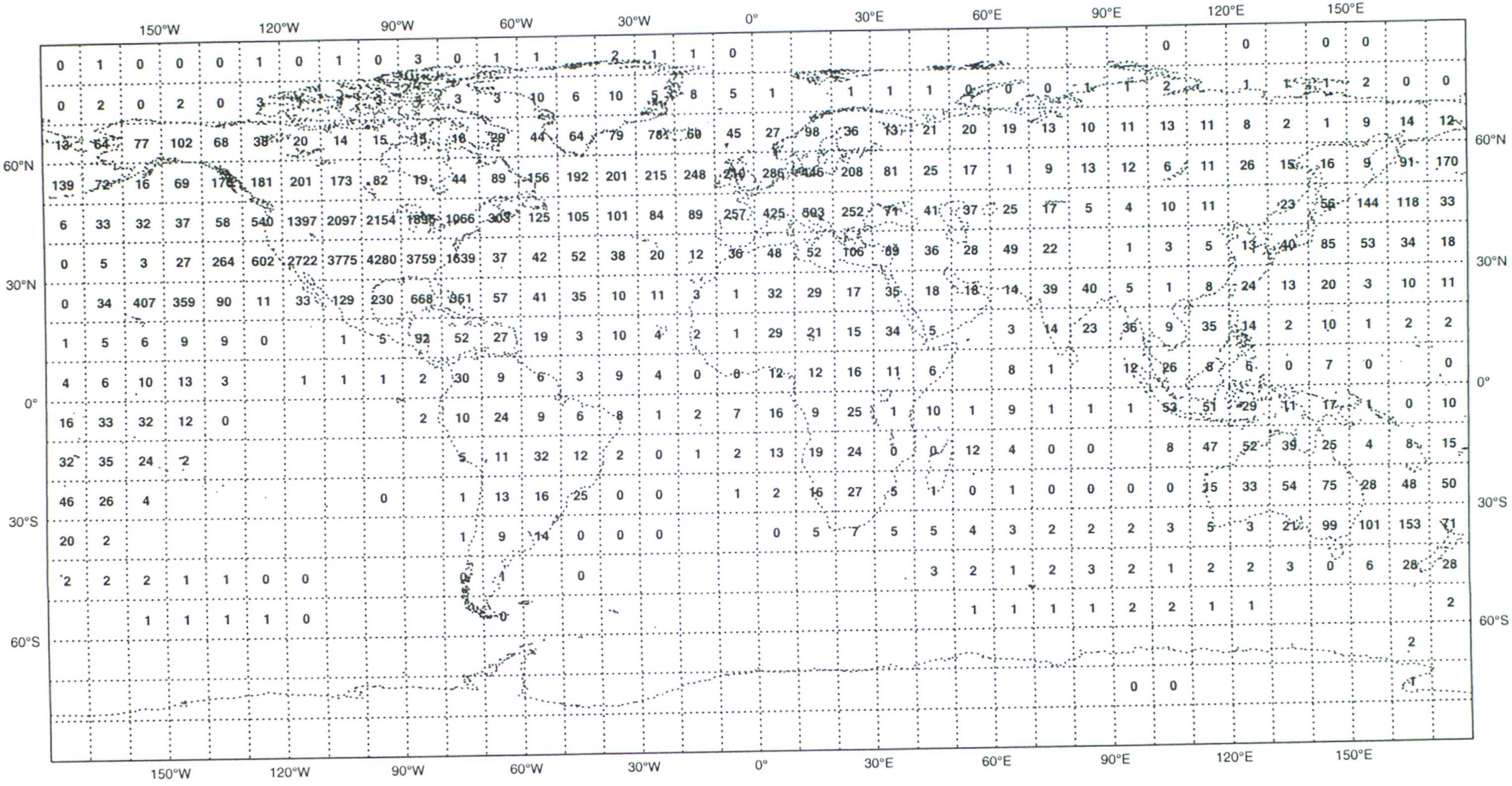

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 3b. AIRCRAFT 1000 - 301 hPa mean daily count. OCTOBER 2003
Observations with O-B vector difference greater than 60 ms-1 excluded
Global average number of observations in 24 hours = 81695

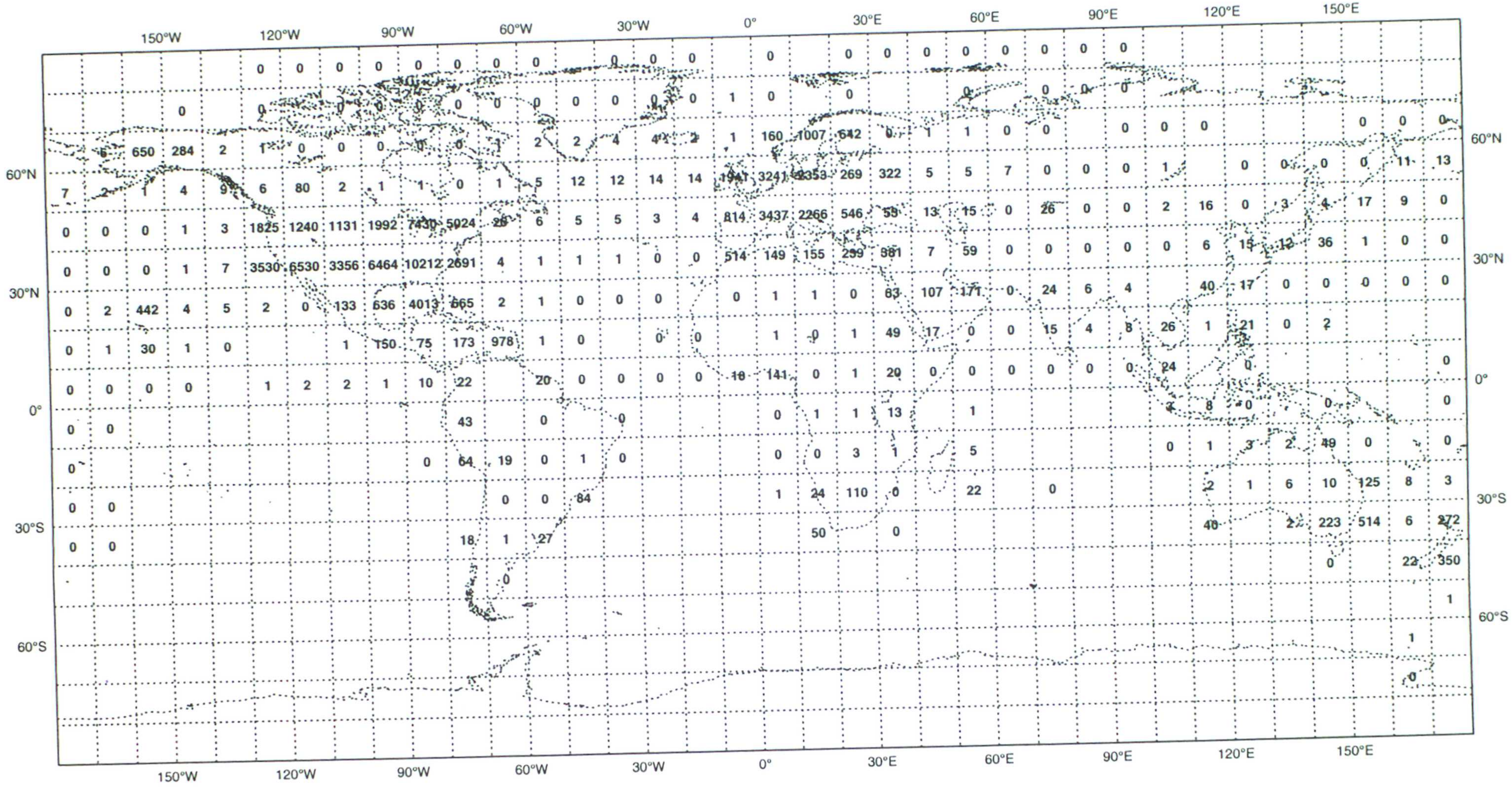

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 4a. AIRCRAFT 300 - 150 hPa mean winds. OCTOBER 2003
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

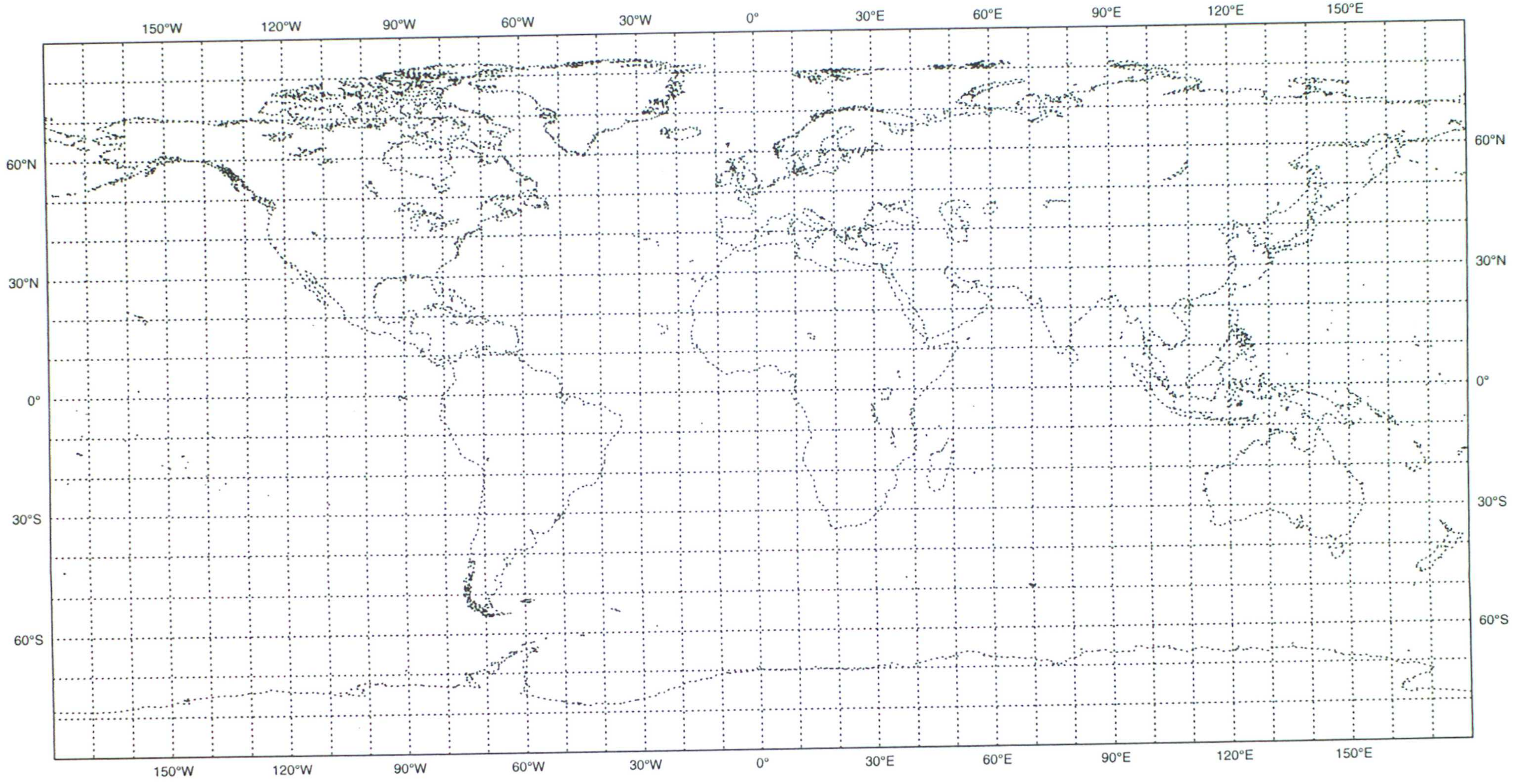

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 4b. AIRCRAFT 1000 - 301 hPa mean winds. OCTOBER 2003
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

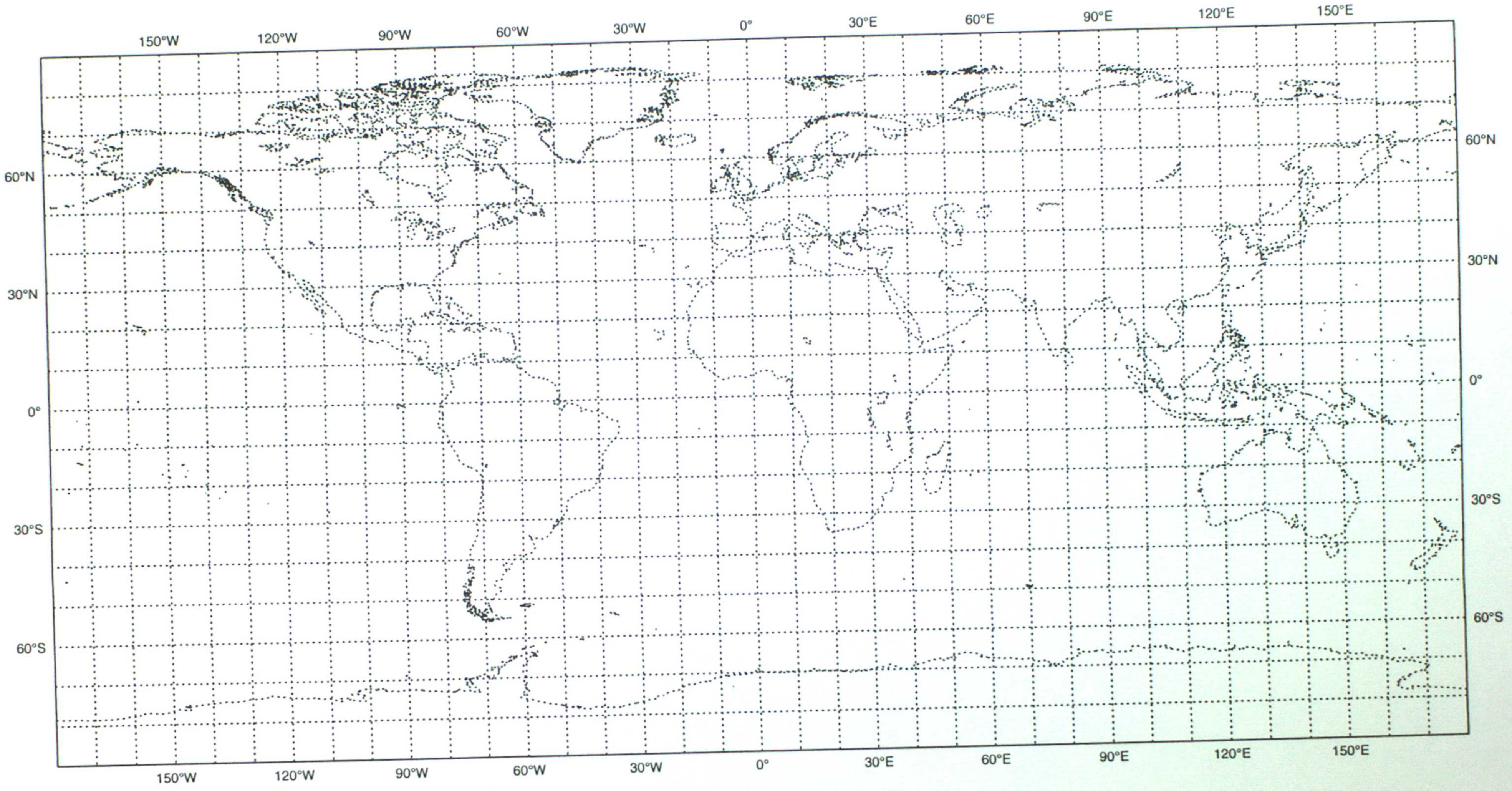

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 5a. AIRCRAFT 300 - 150 hPa mean O-B winds. OCTOBER 2003
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

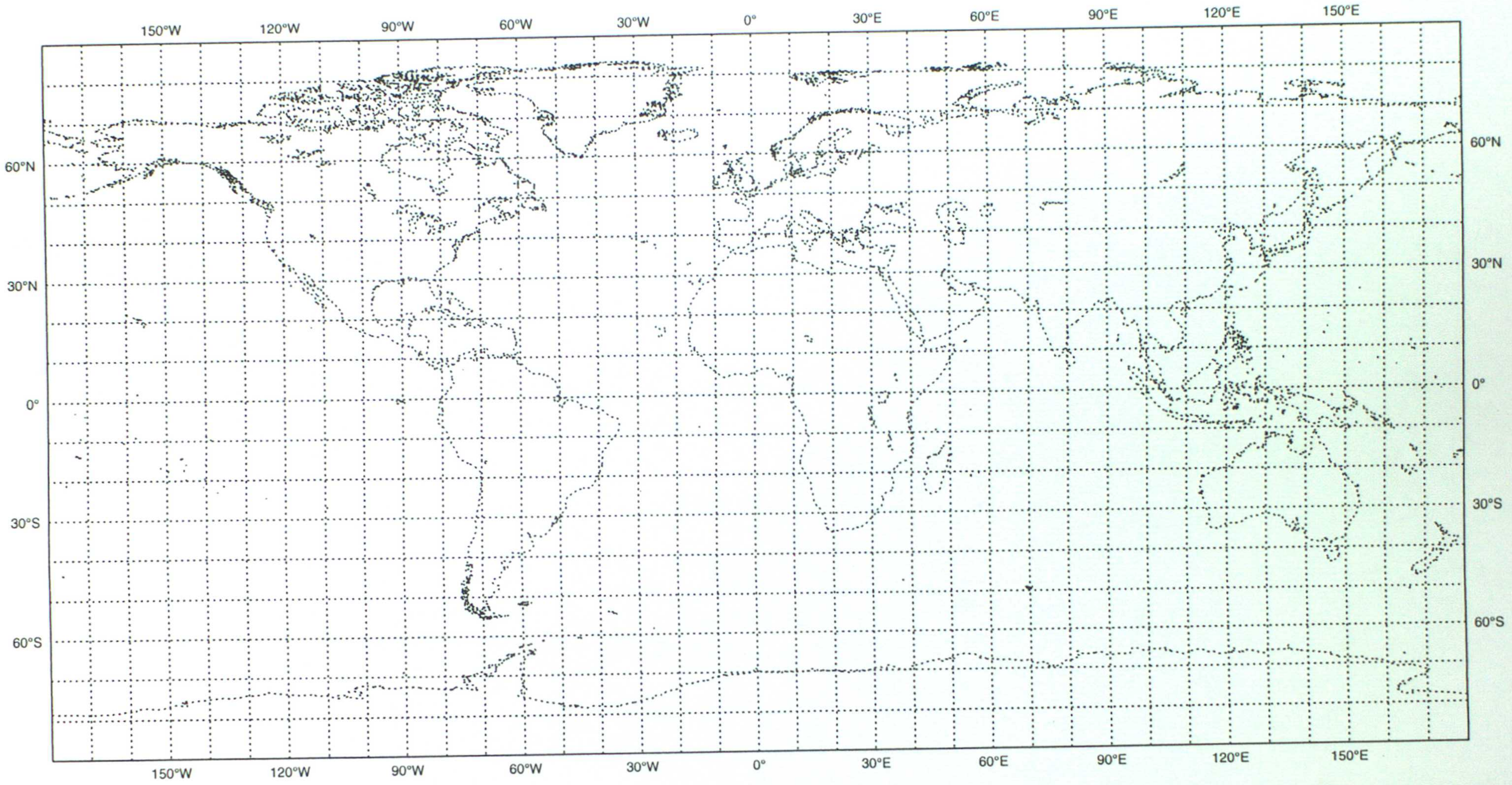

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 5b. AIRCRAFT 1000 - 301 hPa mean O-B winds. OCTOBER 2003
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

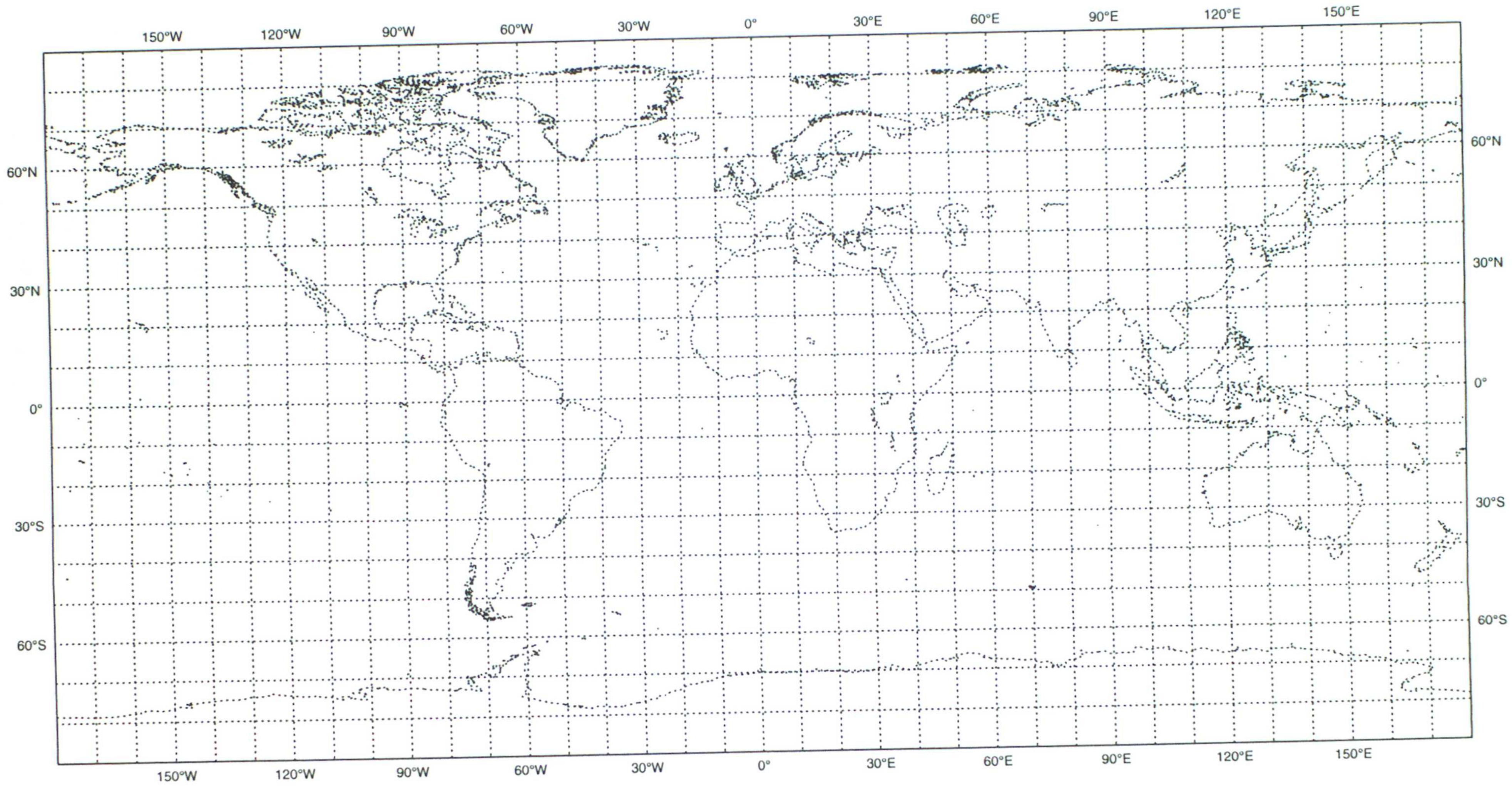

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 6a. AIRCRAFT 300 - 150 hPa mean O-B speeds (ms-1). OCTOBER 2003
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

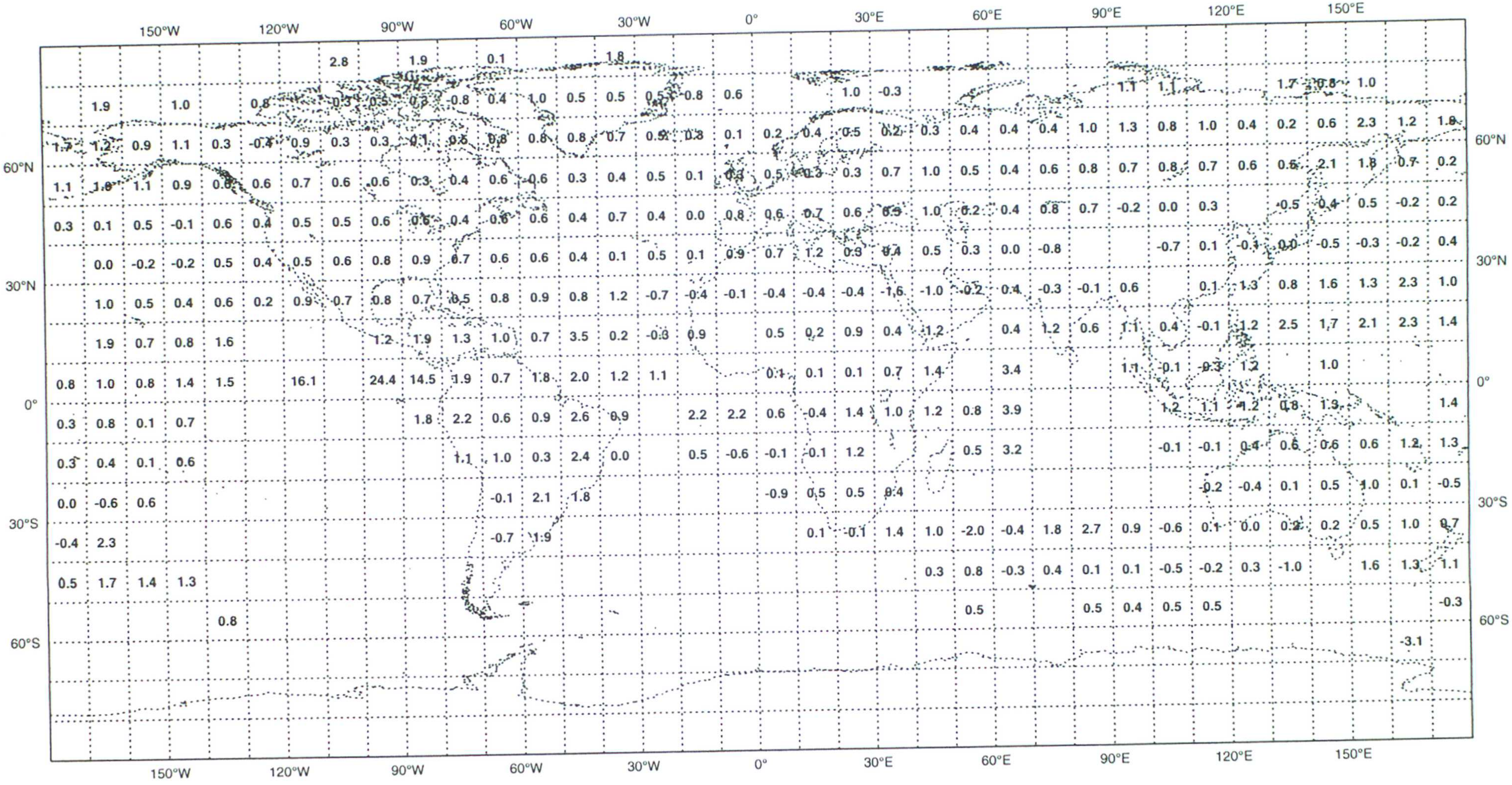
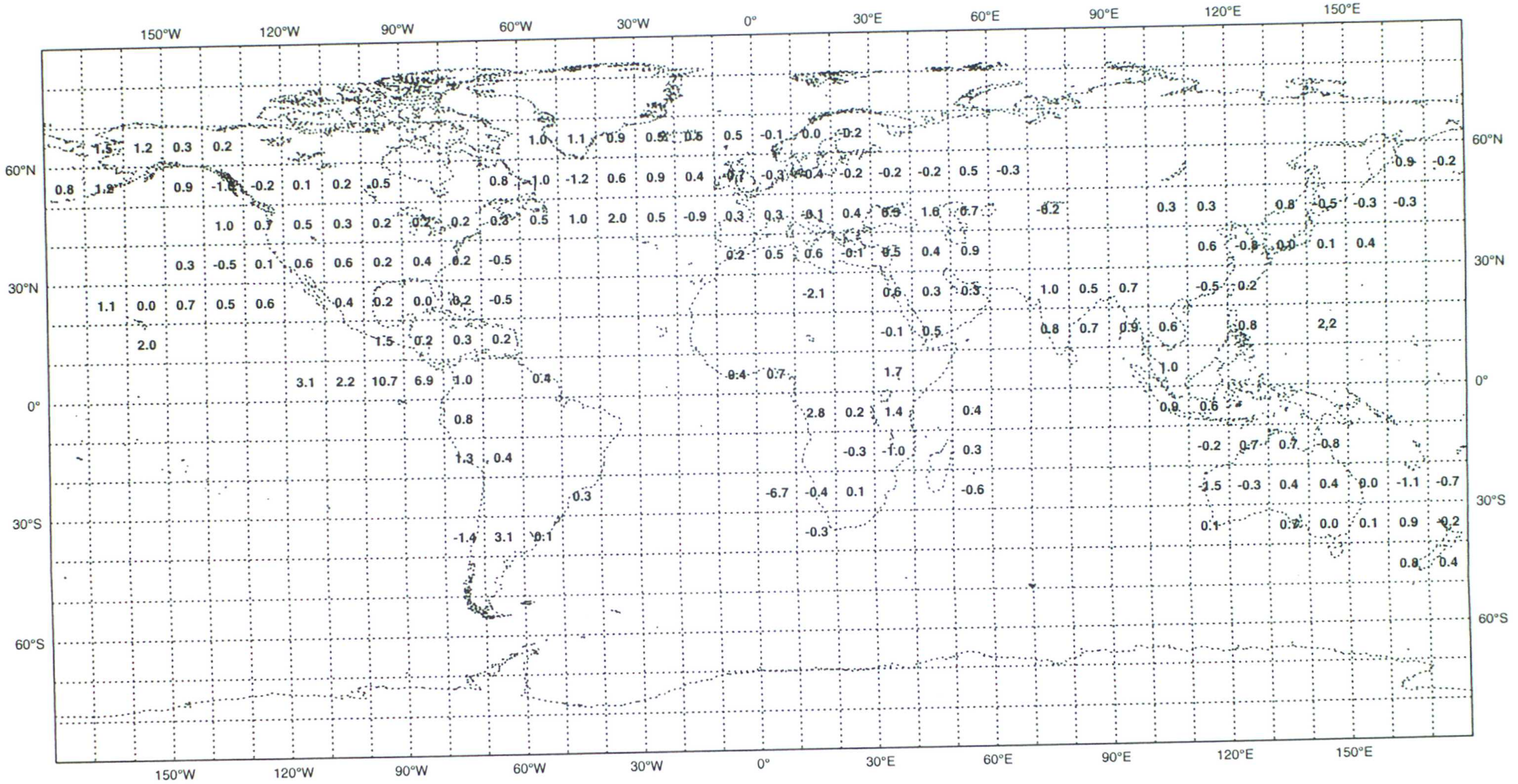

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
2.8 1.9 0.1 1.8
1.9 1.0 0.8 -0.3 0.5 0.3 -0.8 0.4 1.0 0.5 0.5 0.5 -0.8 0.6 1.0 -0.3 1.1 1.1 1.7 0.8 1.0
1.7 1.2 0.9 1.1 0.3 -0.4 0.9 0.3 0.3 0.1 0.5 0.8 0.8 0.8 0.7 0.9 0.8 0.1 0.2 0.4 0.5 0.2 0.3 0.4 0.4 0.4 1.0 1.3 0.8 1.0 0.4 0.2 0.6 2.3 1.2 1.8
1.1 1.8 1.1 0.9 0.8 0.6 0.7 0.6 0.6 0.3 0.4 0.6 -0.6 0.3 0.4 0.5 0.1 0.3 0.5 0.3 0.3 0.7 1.0 0.5 0.4 0.6 0.8 0.7 0.8 0.7 0.6 0.6 2.1 1.8 0.7 0.2
0.3 0.1 0.5 -0.1 0.6 0.4 0.5 0.5 0.6 0.6 0.4 0.6 0.6 0.4 0.7 0.4 0.0 0.8 0.6 0.7 0.6 0.5 1.0 0.2 0.4 0.8 0.7 -0.2 0.0 0.3 0.5 0.4 0.5 -0.2 0.2
0.0 -0.2 -0.2 0.5 0.4 0.5 0.6 0.8 0.9 0.7 0.6 0.6 0.4 0.1 0.5 0.1 0.9 0.7 1.2 0.3 0.4 0.5 0.3 0.0 -0.8 -0.7 0.1 -0.1 0.0 -0.5 -0.3 -0.2 0.4
1.0 0.5 0.4 0.6 0.2 0.9 -0.7 0.8 0.7 0.5 0.8 0.9 0.8 1.2 -0.7 -0.4 -0.1 -0.4 -0.4 -0.4 -1.6 -1.0 -0.2 0.4 -0.3 -0.1 0.6 0.1 1.3 0.8 1.6 1.3 2.3 1.0
1.9 0.7 0.8 1.6 1.2 1.9 1.3 1.0 0.7 3.5 0.2 -0.3 0.9 0.5 0.2 0.9 0.4 1.2 0.4 1.2 0.6 1.1 0.4 -0.1 1.2 2.5 1.7 2.1 2.3 1.4
0.8 1.0 0.8 1.4 1.5 16.1 24.4 14.5 1.9 0.7 1.8 2.0 1.2 1.1 0.1 0.1 0.1 0.7 1.4 3.4 1.1 -0.1 -0.3 1.2 1.0
0.3 0.8 0.1 0.7 1.8 2.2 0.6 0.9 2.6 0.9 2.2 2.2 0.6 -0.4 1.4 1.0 1.2 0.8 3.9 1.2 1.1 1.2 0.8 1.3 1.4
0.3 0.4 0.1 0.6 1.1 1.0 0.3 2.4 0.0 0.5 -0.6 -0.1 -0.1 1.2 0.5 3.2 -0.1 -0.1 0.4 0.6 0.6 0.6 1.2 1.3
0.0 -0.6 0.6 -0.1 2.1 1.8 -0.9 0.5 0.5 0.4 -0.2 -0.4 0.1 0.5 1.0 0.1 -0.5
-0.4 2.3 -0.7 1.9 0.1 -0.1 1.4 1.0 -2.0 -0.4 1.8 2.7 0.9 -0.6 0.1 0.0 0.2 0.2 0.5 1.0 0.7
0.5 1.7 1.4 1.3 0.3 0.8 -0.3 0.4 0.1 0.1 -0.5 -0.2 0.3 -1.0 1.6 1.3 1.1
0.8 0.5 0.5 0.4 0.5 0.5 -0.3
-3.1

Figure 6b. AIRCRAFT 1000 - 301 hPa mean O-B speeds (ms-1). OCTOBER 2003
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present


150°W
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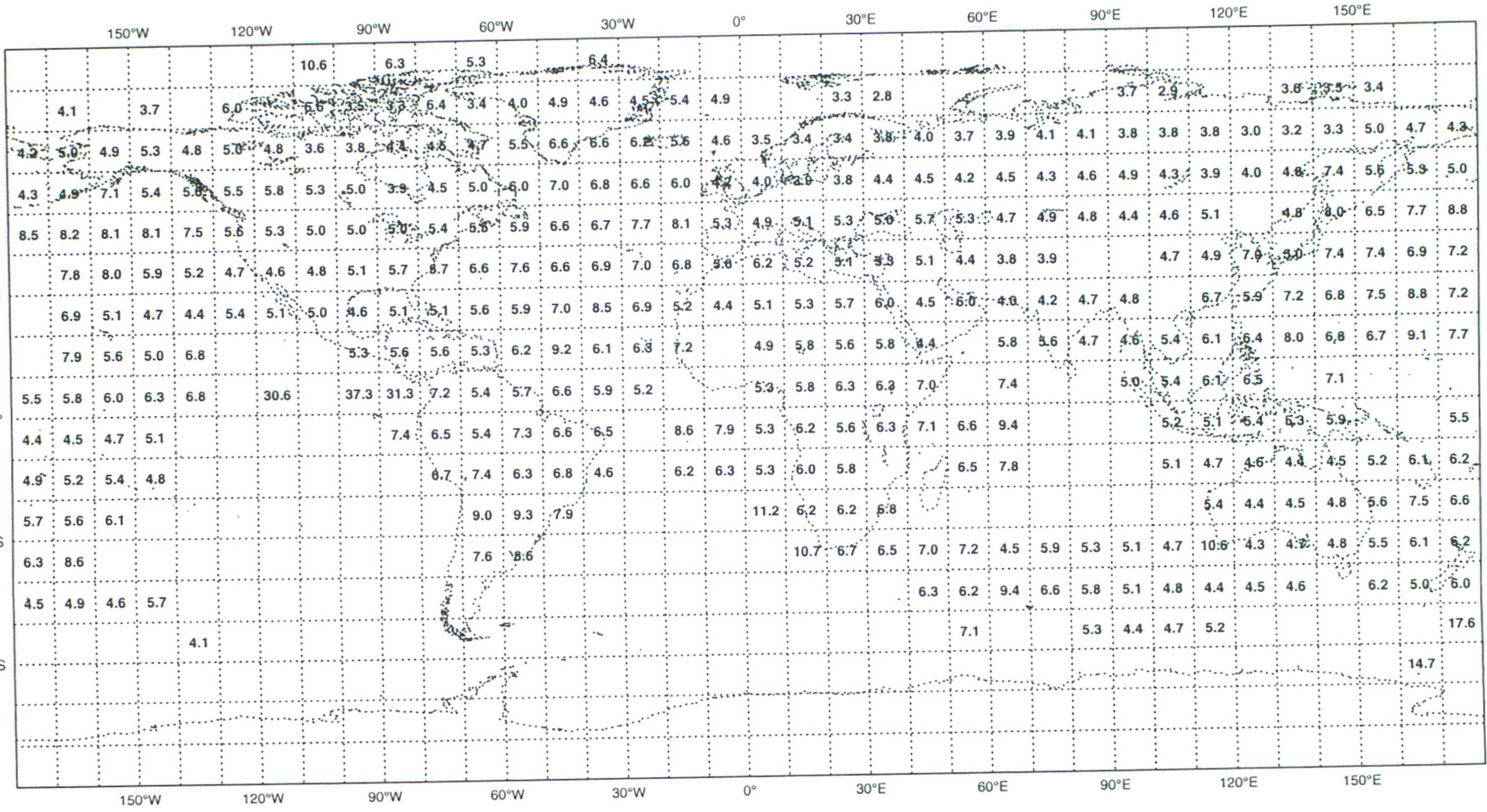
1.5 1.2 0.3 0.2 1.0 1.1 0.9 0.5 0.5 0.5 -0.1 0.0 -0.2 -0.9 -0.2
0.8 1.9 0.9 -1.8 -0.2 0.1 0.2 0.5 0.8 -1.0 -1.2 0.6 0.9 0.4 -0.7 -0.3 -0.4 -0.2 -0.2 -0.2 0.5 -0.3
1.0 0.7 0.5 0.3 0.2 0.2 0.2 0.3 0.5 1.0 2.0 0.5 -0.9 0.3 0.3 -0.1 0.4 0.5 1.6 0.7 -0.2 0.3 0.3 0.8 -0.5 -0.3 -0.3
0.3 -0.5 0.1 0.6 0.6 0.2 0.4 0.2 -0.5 0.2 0.5 0.6 -0.1 0.5 0.4 0.9 0.6 -0.8 0.0 0.1 0.4
1.1 0.0 0.7 0.5 0.6 0.4 0.2 0.0 0.2 -0.5 -2.1 0.6 0.3 0.3 1.0 0.5 0.7 -0.5 0.2
2.0 1.5 0.2 0.3 0.2 -0.1 0.5 0.8 0.7 0.9 0.6 0.8 2.2
3.1 2.2 10.7 6.9 1.0 0.4 0.4 0.7 1.7 1.0
0.8 2.8 0.2 1.4 0.4 0.9 0.6
1.3 0.4 -0.3 -1.0 0.3 -0.2 0.7 0.7 -0.8
0.3 -6.7 -0.4 0.1 -0.6 -1.5 -0.3 0.4 0.4 0.0 -1.1 -0.7
-1.4 3.1 0.1 -0.3 0.1 0.2 0.0 0.1 0.9 0.2
0.8 0.4

Figure 7a. AIRCRAFT 300 - 150 hPa RMS O-B vector (ms-1). OCTOBER 2003
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present



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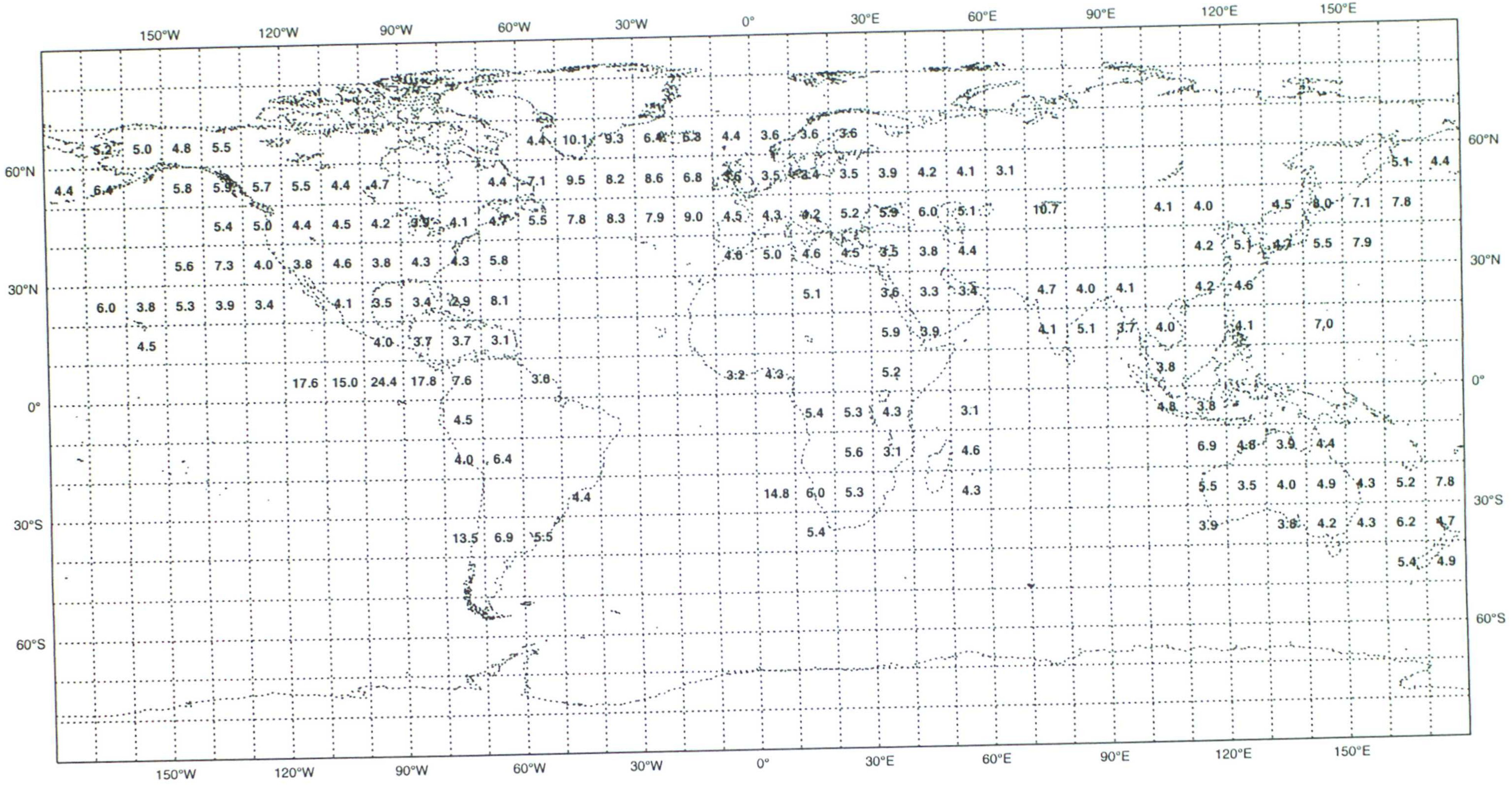
10.6 6.3 5.3 6.4
4.1 3.7 6.0 5.6 3.5 3.7 6.4 3.4 4.0 4.9 4.6 4.5 5.4 4.9 3.3 2.8 3.7 2.9 3.8 3.5 3.4
4.2 5.0 4.9 5.3 4.8 5.0 4.8 3.6 3.8 4.1 4.5 4.7 5.5 6.6 6.6 6.2 5.6 4.6 3.5 3.4 3.4 3.8 4.0 3.7 3.9 4.1 4.1 3.8 3.8 3.8 3.0 3.2 3.3 5.0 4.7 4.3
4.3 4.9 7.1 5.4 5.8 5.5 5.8 5.3 5.0 3.9 4.5 5.0 6.0 7.0 6.8 6.6 6.0 4.2 4.0 2.9 3.8 4.4 4.5 4.2 4.5 4.3 4.6 4.9 4.3 3.9 4.0 4.8 7.4 5.6 5.9 5.0
8.5 8.2 8.1 8.1 7.5 5.6 5.3 5.0 5.0 5.0 5.4 5.8 5.9 6.6 6.7 7.7 8.1 5.3 4.9 5.1 5.3 5.0 5.7 5.3 4.7 4.9 4.8 4.4 4.6 5.1 4.8 8.0 6.5 7.7 8.8
7.8 8.0 5.9 5.2 4.7 4.6 4.8 5.1 5.7 8.7 6.6 7.6 6.6 6.9 7.0 6.8 5.6 6.2 5.2 5.1 5.3 5.1 4.4 3.8 3.9 4.7 4.9 7.0 5.0 7.4 7.4 6.9 7.2
6.9 5.1 4.7 4.4 5.4 5.1 5.0 4.6 5.1 5.1 5.6 5.9 7.0 8.5 6.9 5.2 4.4 5.1 5.3 5.7 6.0 4.5 6.0 4.0 4.2 4.7 4.8 6.7 5.9 7.2 6.8 7.5 8.8 7.2
7.9 5.6 5.0 6.8 5.3 5.6 5.6 5.3 6.2 9.2 6.1 6.3 7.2 4.9 5.8 5.6 5.8 4.4 5.8 5.6 4.7 4.6 5.4 6.1 6.4 8.0 6.8 6.7 9.1 7.7
5.5 5.8 6.0 6.3 6.8 30.6 37.3 31.3 7.2 5.4 5.7 6.6 5.9 5.2 5.3 5.8 6.3 6.3 7.0 7.4 5.0 5.4 6.1 6.5 7.1
4.4 4.5 4.7 5.1 7.4 6.5 5.4 7.3 6.6 6.5 8.6 7.9 5.3 6.2 5.6 6.3 7.1 6.6 9.4 5.2 5.1 5.4 5.3 5.9 5.5
4.9 5.2 5.4 4.8 6.7 7.4 6.3 6.8 4.6 6.2 6.3 5.3 6.0 5.8 6.5 7.8 5.1 4.7 4.6 4.4 4.5 5.2 6.1 6.2
5.7 5.6 6.1 9.0 9.3 7.9 11.2 6.2 6.2 6.8 5.4 4.4 4.5 4.8 5.6 7.5 6.6
6.3 8.6 7.6 8.6 10.7 6.7 6.5 7.0 7.2 4.5 5.9 5.3 5.1 4.7 10.6 4.3 4.2 4.8 5.5 6.1 6.2
4.5 4.9 4.6 5.7 6.3 6.2 9.4 6.6 5.8 5.1 4.8 4.4 4.5 4.6 6.2 5.0 6.0
4.1 7.1 5.3 4.4 4.7 5.2 17.6
14.7

Figure 7b. AIRCRAFT 1000 - 301 hPa RMS O-B vector (ms-1). OCTOBER 2003
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present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5.2 5.0 4.8 5.5 4.4 10.1 9.3 6.4 5.8 4.4 3.6 3.6 3.6 5.1 4.4
4.4 6.4 5.8 5.9 5.7 5.5 4.4 4.7 4.4 7.1 9.5 8.2 8.6 6.8 3.6 3.5 4.4 3.5 3.9 4.2 4.1 3.1
5.4 5.0 4.4 4.5 4.2 3.9 4.1 4.7 5.5 7.8 8.3 7.9 9.0 4.5 4.3 4.2 5.2 5.9 6.0 5.1 10.7 4.1 4.0 4.5 8.0 7.1 7.8
5.6 7.3 4.0 3.8 4.6 3.8 4.3 4.3 5.8 4.6 5.0 4.6 4.5 3.5 3.8 4.4 4.2 5.1 4.7 5.5 7.9
6.0 3.8 5.3 3.9 3.4 4.1 3.5 3.4 2.9 8.1 5.1 3.6 3.3 3.4 4.7 4.0 4.1 4.2 4.6
4.5 4.0 3.7 3.7 3.1 5.9 3.9 4.1 5.1 3.7 4.0 4.1 7.0
17.6 15.0 24.4 17.8 7.6 3.6 3.2 4.3 5.2 3.8
4.5 5.4 5.3 4.3 3.1 4.8 3.8
4.0 6.4 5.6 3.1 4.6 6.9 4.8 3.9 4.4
4.4 14.8 6.0 5.3 4.3 5.5 3.5 4.0 4.9 4.3 5.2 7.8
13.5 6.9 5.5 5.4 3.9 3.8 4.2 4.3 6.2 4.7
5.4 4.9

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Oct 03

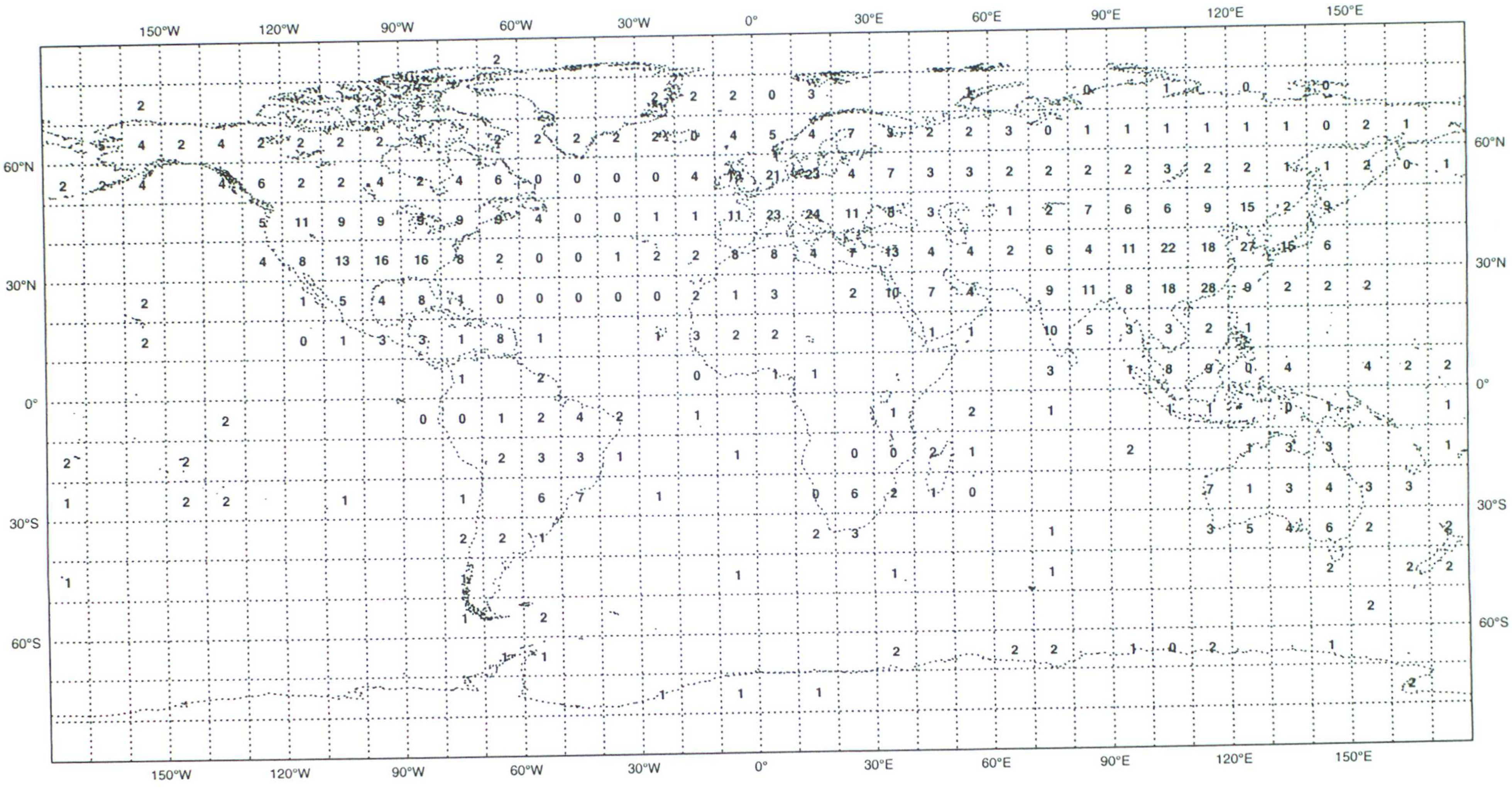
Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 30.0 hPa
Element monitored		:GEOPOTENTIAL HEIGHT IN metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.1	
SELECTION CRITERIA	: ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.	

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
20744	00	Z	200	72/ 53	10	6	62.9	139.2	152.7	7
42182	00	Z	1000	29/ 77	3	20	10.3	-85.3	86.0	10
42182	12	Z	1000	29/ 77	1	27	0.0	-95.0	95.0	10
42314	00	Z	200	27/ 95	16	0	75.9	-17.7	78.0	4
42339	12	Z	200	26/ 73	17	0	66.6	-72.8	98.6	4
42361	00	Z	1000	26/ 78	2	18	7.0	-81.0	81.3	5
42361	12	Z	1000	26/ 78	1	22	0.0	-88.0	88.0	7
42369	00	Z	1000	27/ 81	23	0	20.7	-43.0	47.8	4
42369	12	Z	1000	27/ 81	22	2	24.8	-54.5	59.9	9
42410	12	Z	1000	26/ 92	1	24	0.0	-96.0	96.0	7
42492	12	Z	100	26/ 85	14	0	135.8	-0.7	135.8	4
42647	12	Z	150	23/ 73	16	0	87.2	83.9	121.0	6
42701	00	Z	100	23/ 85	16	0	129.9	23.4	132.0	6
42701	12	Z	100	23/ 85	11	0	104.9	-54.7	118.3	6
42724	00	Z	150	24/ 91	19	1	68.0	-96.2	117.8	6
42724	12	Z	200	24/ 91	14	2	68.3	-110.3	129.7	6
42809	00	Z	200	23/ 88	27	0	96.9	-75.6	122.9	7
42809	12	Z	150	23/ 88	18	3	93.3	-101.9	138.2	8
42867	00	Z	150	21/ 79	24	0	106.6	-26.6	109.8	4
43003	00	Z	1000	19/ 73	23	4	11.4	-74.3	75.1	12
43003	12	Z	1000	19/ 73	19	7	10.4	-79.2	79.8	12
43014	12	Z	100	20/ 75	11	1	67.0	115.4	133.4	8
43041	00	Z	400	19/ 82	20	1	59.1	-14.2	60.8	7
43128	00	Z	200	17/ 78	18	0	64.6	-57.1	86.2	4
43150	00	Z	1000	18/ 83	7	17	9.6	-79.0	79.6	6
43150	12	Z	1000	18/ 83	5	21	10.5	-86.2	86.8	5
43185	00	Z	50	16/ 81	11	0	59.5	172.9	182.9	8
43192	00	Z	1000	15/ 74	3	17	21.2	-83.0	85.7	4
43192	12	Z	200	15/ 74	13	0	98.4	-6.9	98.6	4
43279	12	Z	50	13/ 80	14	0	96.9	223.1	243.3	4
43295	12	Z	850	13/ 78	21	1	27.7	34.6	44.3	5
43333	12	Z	200	12/ 93	25	0	69.4	-63.5	94.1	6
43346	00	Z	70	11/ 80	10	0	146.3	102.3	178.5	8
43346	12	Z	30	11/ 80	10	1	102.4	235.7	257.0	6
43353	00	Z	1000	10/ 76	12	6	8.0	-86.6	87.0	5
43353	12	Z	1000	10/ 76	8	9	6.7	-89.6	89.9	4
43371	00	Z	200	8/ 77	21	0	66.8	-86.7	109.5	8
43371	12	Z	70	8/ 77	10	0	123.0	117.4	170.0	4
43466	12	Z	250	7/ 80	7	0	80.8	40.7	90.5	4
58968	00	Z	1000	25/ 122	25	0	24.0	-43.6	49.8	4
78866	12	Z	850	18/ -63	23	0	31.0	27.3	41.3	5
89592	00	Z	50	-67/ 93	21	2	83.9	179.9	198.5	6
96935	00	Z	300	-7/ 113	9	0	76.8	-27.2	81.5	4
97180	00	Z	200	-5/ 120	12	0	65.8	-88.4	110.2	7
97560	00	Z	200	-1/ 136	14	0	45.9	-75.4	88.3	4

Figure 8. TEMP 500 hPa geopotential mean daily count. OCTOBER 2003
All hours
Global average number of observations in 24 hours = 1057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30°N
0°
30°S
60°S

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Oct 03

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 100.0 hPa

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.

:UBIAS,VBIAS :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.2

SELECTION CRITERIA : ≥ 10 observations and ≥ 15 m s^{-1} RMS vector wind.

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
07145	12	V	150	49/ 2	29	0	3	-2.4	1.7	18.6	1
42111	00	V	300	30/ 78	11	0	9	-6.5	-0.9	17.3	1
42182	00	V	300	29/ 77	23	0	78	-9.5	-9.1	20.8	3
42182	12	V	150	29/ 77	17	0	100	-7.5	-3.8	19.4	1
42361	00	V	200	26/ 78	10	1	10	7.2	-6.5	15.5	1
42410	12	V	300	26/ 92	19	0	84	6.5	5.3	15.9	1
43311	00	V	150	11/ 73	10	0	70	-6.5	0.4	15.3	1
47058	00	V	250	39/ 126	15	0	100	-6.5	5.8	22.4	3
60360	12	V	150	37/ 8	14	0	100	11.3	0.2	25.7	3
68442	12	V	400	-29/ 26	11	0	100	-9.7	-0.3	15.7	1
68512	12	V	250	-30/ 18	16	0	100	-9.1	-2.3	16.4	2

Figure 9. TEMP/PILOT 300 hPa wind mean daily count. OCTOBER 2003
All hours
Global average number of observations in 24 hours = 1221

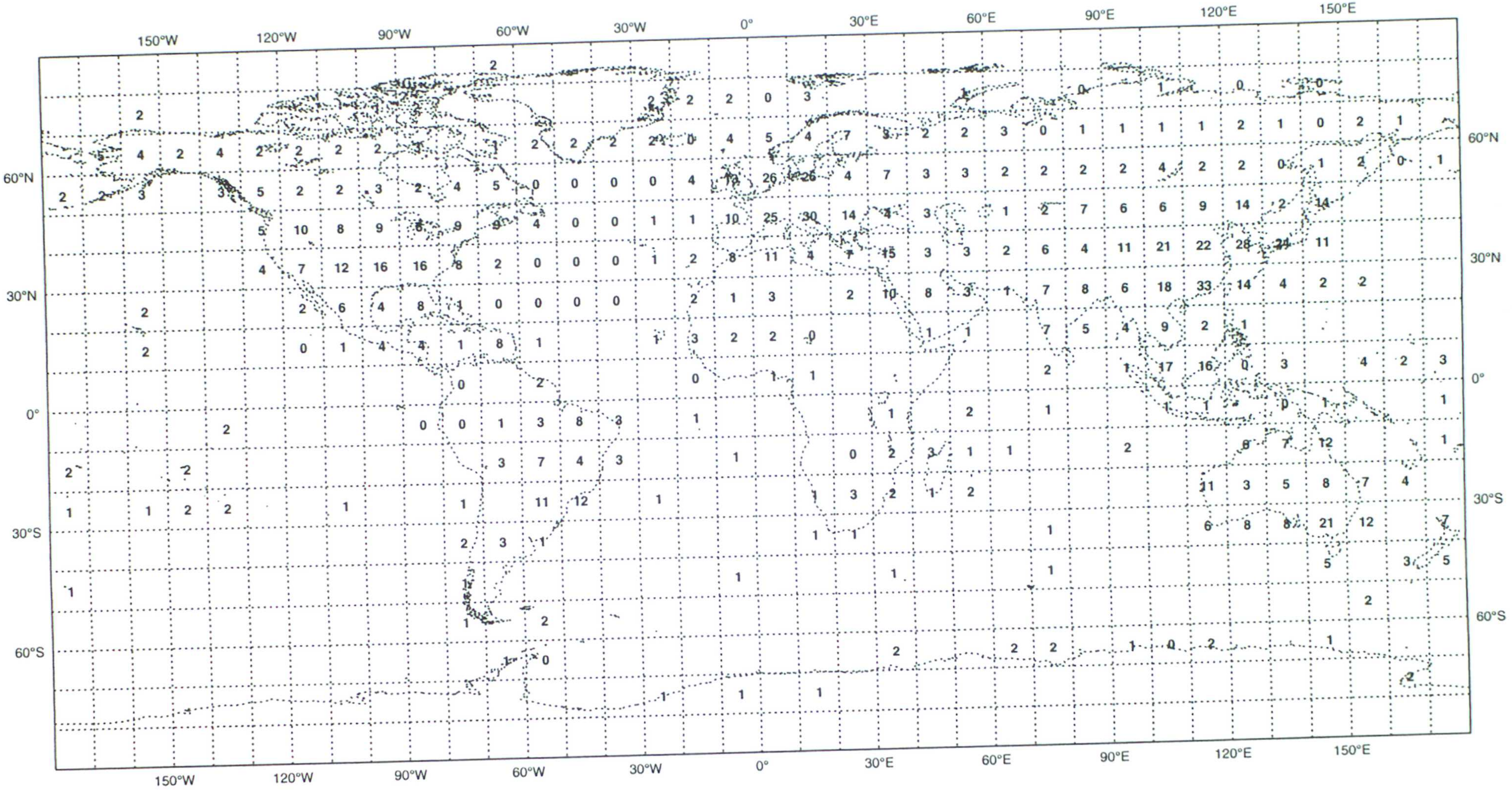

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Oct 03

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 500.0 - 150.0 hPa
Element monitored		:WIND DIRECTION in degrees
Parameters monitored		
	:NUM OBS	:Average number of observations at all levels.
	:BIAS	:Mean difference of observations from background values from all levels.
	:MAX SPREAD	:(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels
	:SD	:SD of difference of observations from background values at all levels.

SELECTION CRITERIA	:NUM OBS ≥ 5, and ABSOLUTE BIAS ≥ 10°, with SD < 30°, and MAX SPREAD < 10°

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
KHRH	12	DD	38/ -62	6	-14.3	8.7	29.0
33791	12	DD	48/ 33	22	-15.0	7.3	14.2
42397	00	DD	27/ 88	5	18.8	9.0	9.0
42410	12	DD	26/ 92	14	-10.2	3.8	15.0
42701	12	DD	23/ 85	14	11.1	6.2	18.7
43150	00	DD	18/ 83	15	-10.3	9.7	24.6
59758	00	DD	20/ 110	17	10.3	8.6	19.8
62337	12	DD	31/ 34	23	-19.7	3.6	10.8
78954	12	DD	13/ -59	14	-13.3	5.8	17.7

MONITORING OF SATELLITE WINDS

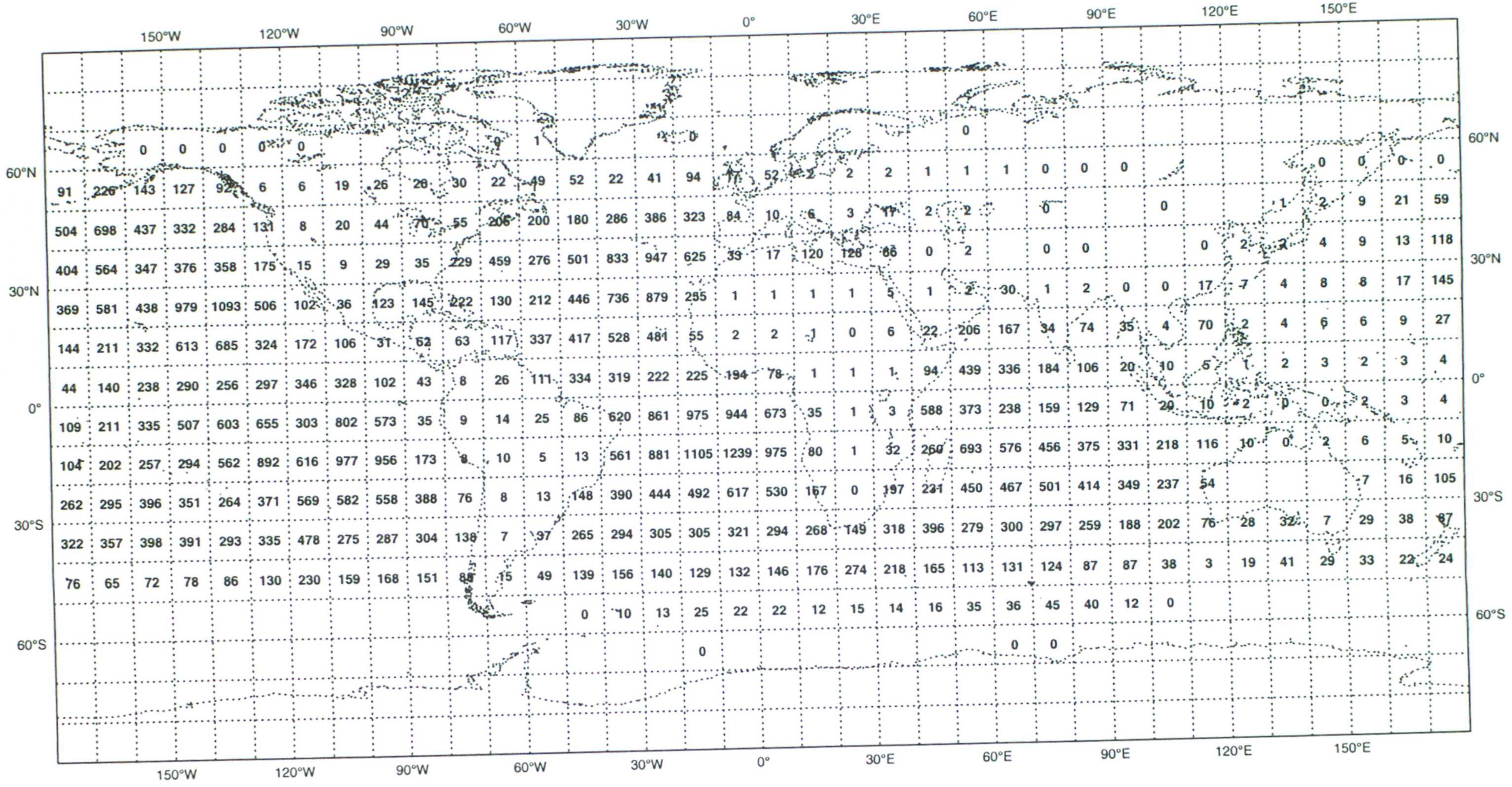
MONITORING CENTRE: EXETER

MONTH: Oct 03

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from GOES-8, GOES-10, METEOSAT-5, METEOSAT-7, GMS-5, INSAT.
Standard of comparison	:Background field from UKMO global model.
Selection Criteria	:number of observations > 10.
Data Extracted	:Layer 701 - 1000 hPa 401 - 700 hPa 101 - 400 hPa
	:Mean wind
	:Mean observation minus background vector wind differences
	:Mean observation minus background speed differences
	:RMS of observation minus background vector differences

Figure 10. SATOB 701 - 1000 hPa mean daily count. OCTOBER 2003
Global average number of observations in 24 hours = 75295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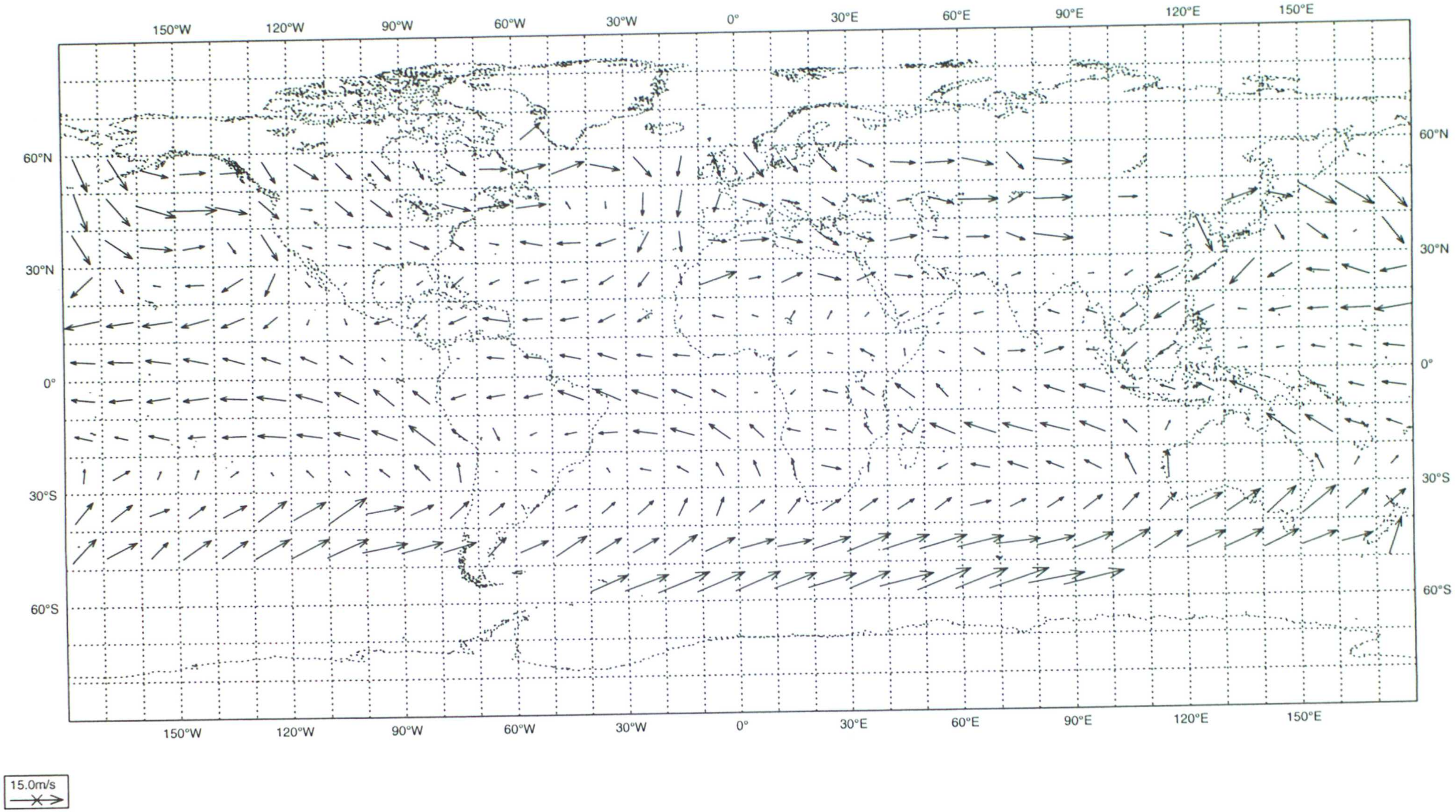
504 698 437 332 284 131 8 20 44 70 55 206 200 180 286 386 323 84 10 6 3 17 2 2 0 0 1 2 9 21 59
404 564 347 376 358 175 15 9 29 35 229 459 276 501 833 947 625 33 17 120 128 66 0 2 0 0 0 2 2 4 9 13 118
369 581 438 979 1093 506 102 36 123 145 222 130 212 446 736 879 255 1 1 1 1 5 1 2 30 1 2 0 0 17 7 4 8 8 17 145
144 211 332 613 685 324 172 106 31 62 63 117 337 417 528 481 55 2 2 1 0 6 22 206 167 34 74 35 4 70 2 4 6 6 9 27
44 140 238 290 256 297 346 328 102 43 8 26 111 334 319 222 225 194 78 1 1 1 94 439 336 184 106 20 10 5 1 2 3 2 3 4
109 211 335 507 603 655 303 802 573 35 9 14 25 86 620 861 975 944 673 35 1 3 588 373 238 159 129 71 20 10 2 0 0 2 3 4
104 202 257 294 562 892 616 977 956 173 8 10 5 13 561 881 1105 1239 975 80 1 32 260 693 576 456 375 331 218 116 10 0 2 6 5 10
262 295 396 351 264 371 569 582 558 388 76 8 13 148 390 444 492 617 530 167 0 197 231 450 467 501 414 349 237 54 7 16 105
322 357 398 391 293 335 478 275 287 304 138 7 37 265 294 305 305 321 294 268 149 318 396 279 300 297 259 188 202 76 28 32 7 29 38 87
76 65 72 78 86 130 230 159 168 151 88 15 49 139 156 140 129 132 146 176 274 218 165 113 131 124 87 87 38 3 19 41 29 33 22 24
0 10 13 25 22 22 12 15 14 16 35 36 45 40 12 0
0 0 0
150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E

Figure 11. SATOB 701 - 1000 hPa vector mean wind. OCTOBER 2003
All observations
Arrows are plotted where greater than 10 obs are present


150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

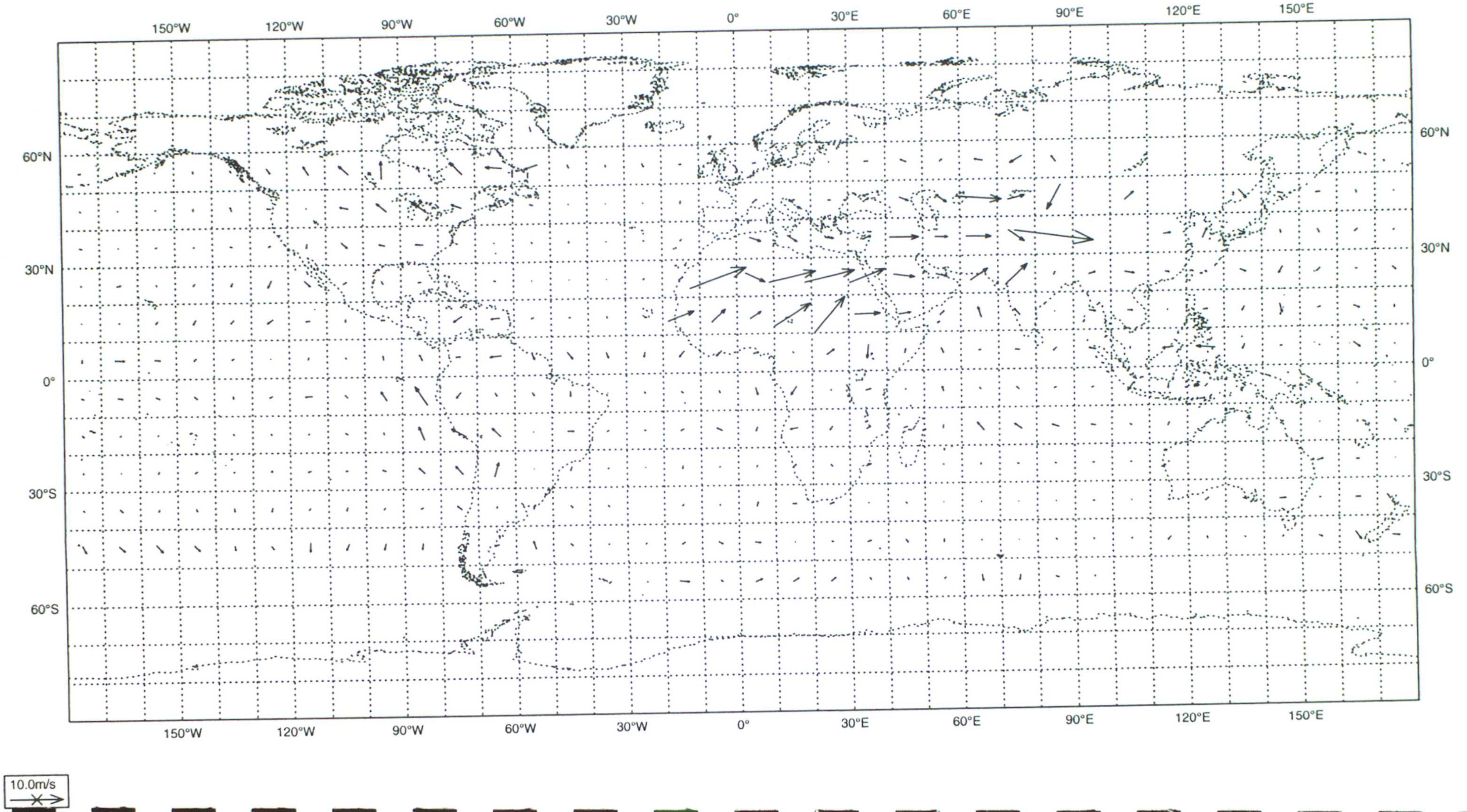


Figure 12. SATOB 701 - 1000 hPa mean vector wind differences. OCTOBER 2003
All observations
Arrows are plotted where greater than 10 obs are present

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0m/s

Figure 13. SATOB 701 - 1000 hPa mean O-B speed differences (ms-1). OCTOBER 2003
All observations
Values are plotted where greater than 10 obs are present

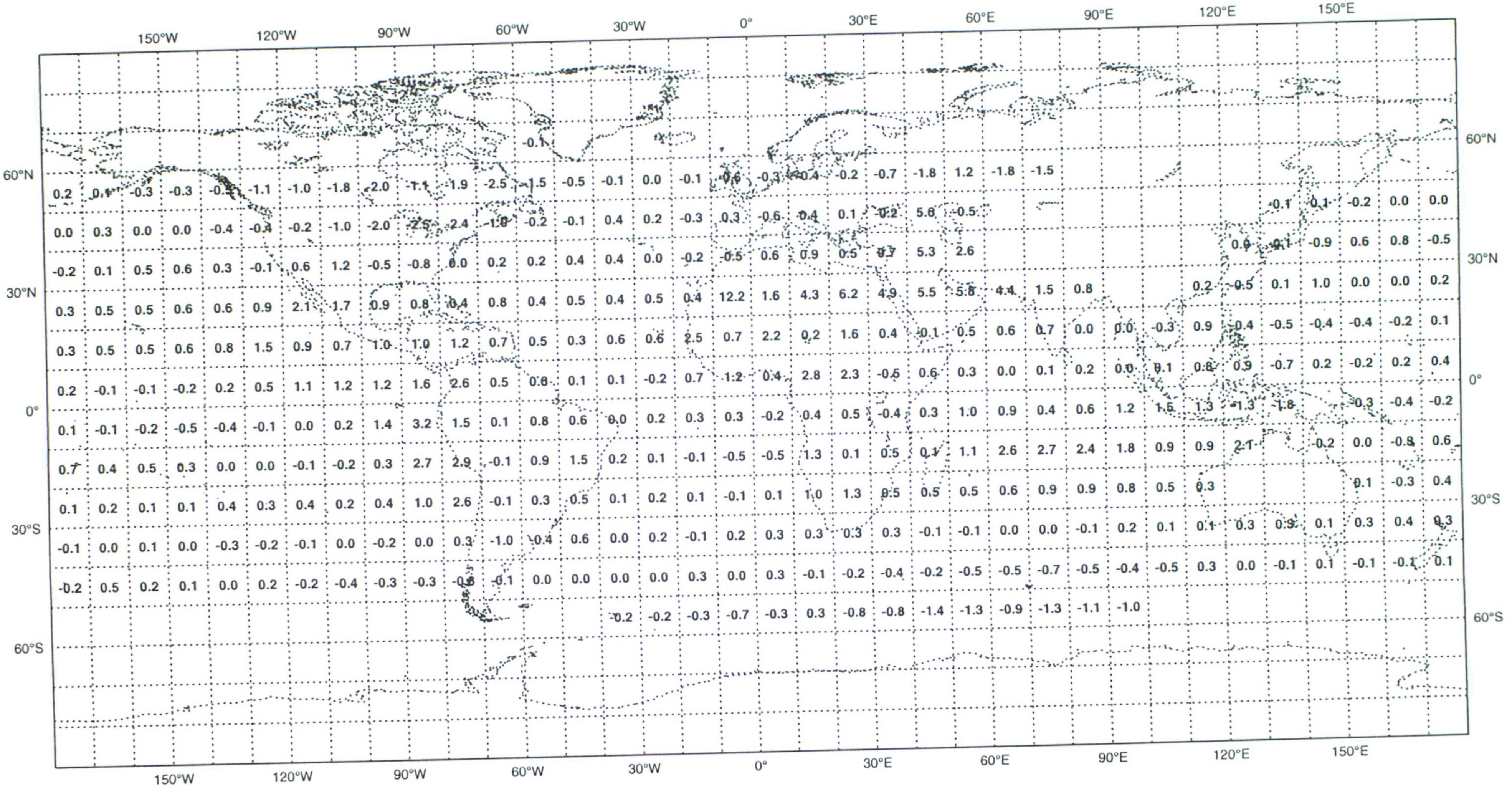

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
-0.1
0.2 0.1 -0.3 -0.3 -0.3 -1.1 -1.0 -1.8 -2.0 -1.1 -1.9 -2.5 -1.5 -0.5 -0.1 0.0 -0.1 -0.6 -0.3 -0.4 -0.2 -0.7 -1.8 1.2 -1.8 -1.5
-0.1 -0.1 -0.2 0.0 0.0
0.0 0.3 0.0 0.0 -0.4 -0.4 -0.2 -1.0 -2.0 -2.5 -2.4 -1.8 -0.2 -0.1 0.4 0.2 -0.3 0.3 -0.6 0.4 0.1 0.2 5.6 -0.5
-0.2 0.1 0.5 0.6 0.3 -0.1 0.6 1.2 -0.5 -0.8 0.0 0.2 0.2 0.4 0.4 0.0 -0.2 -0.5 0.6 0.9 0.5 0.7 5.3 2.6 0.9 -0.1 -0.9 0.6 0.8 -0.5
0.3 0.5 0.5 0.6 0.6 0.9 2.1 1.7 0.9 0.8 0.4 0.8 0.4 0.5 0.4 0.5 0.4 12.2 1.6 4.3 6.2 4.9 5.5 5.8 4.4 1.5 0.8 0.2 -0.5 0.1 1.0 0.0 0.0 0.2
0.3 0.5 0.5 0.6 0.8 1.5 0.9 0.7 1.0 1.0 1.2 0.7 0.5 0.3 0.6 0.6 2.5 0.7 2.2 0.2 1.6 0.4 -0.1 0.5 0.6 0.7 0.0 0.0 -0.3 0.9 -0.4 -0.5 -0.4 -0.4 -0.2 0.1
0.2 -0.1 -0.1 -0.2 0.2 0.5 1.1 1.2 1.2 1.6 2.6 0.5 0.6 0.1 0.1 -0.2 0.7 1.2 0.4 2.8 2.3 -0.6 0.6 0.3 0.0 0.1 0.2 0.0 0.1 0.8 0.9 -0.7 0.2 -0.2 0.2 0.4
0.1 -0.1 -0.2 -0.5 -0.4 -0.1 0.0 0.2 1.4 3.2 1.5 0.1 0.8 0.6 0.0 0.2 0.3 0.3 -0.2 0.4 0.5 -0.4 0.3 1.0 0.9 0.4 0.6 1.2 1.6 1.3 -1.3 -1.8 -0.3 -0.4 -0.2
0.7 0.4 0.5 0.3 0.0 0.0 -0.1 -0.2 0.3 2.7 2.9 -0.1 0.9 1.5 0.2 0.1 -0.1 -0.5 -0.5 1.3 0.1 0.5 0.1 1.1 2.6 2.7 2.4 1.8 0.9 0.9 2.1 -0.2 0.0 -0.8 0.6
0.1 0.2 0.1 0.1 0.4 0.3 0.4 0.2 0.4 1.0 2.6 -0.1 0.3 0.5 0.1 0.2 0.1 -0.1 0.1 1.0 1.3 0.5 0.5 0.5 0.6 0.9 0.9 0.8 0.5 0.3 0.1 -0.3 0.4
-0.1 0.0 0.1 0.0 -0.3 -0.2 -0.1 0.0 -0.2 0.0 0.3 -1.0 0.4 0.6 0.0 0.2 -0.1 0.2 0.3 0.3 0.3 0.3 -0.1 -0.1 0.0 0.0 -0.1 0.2 0.1 0.1 0.3 0.3 0.1 0.3 0.4 0.3
-0.2 0.5 0.2 0.1 0.0 0.2 -0.2 -0.4 -0.3 -0.3 -0.3 -0.1 0.0 0.0 0.0 0.0 0.3 0.0 0.3 -0.1 -0.2 -0.4 -0.2 -0.5 -0.5 -0.7 -0.5 -0.4 -0.5 0.3 0.0 -0.1 0.1 -0.1 -0.1 0.1
-0.2 -0.2 -0.3 -0.7 -0.3 0.3 -0.8 -0.8 -1.4 -1.3 -0.9 -1.3 -1.1 -1.0

Figure 14. SATOB 701 - 1000 hPa mean RMS O-B vector differences (ms-1). OCTOBER 2003
All observations
Values are plotted where greater than 10 obs are present

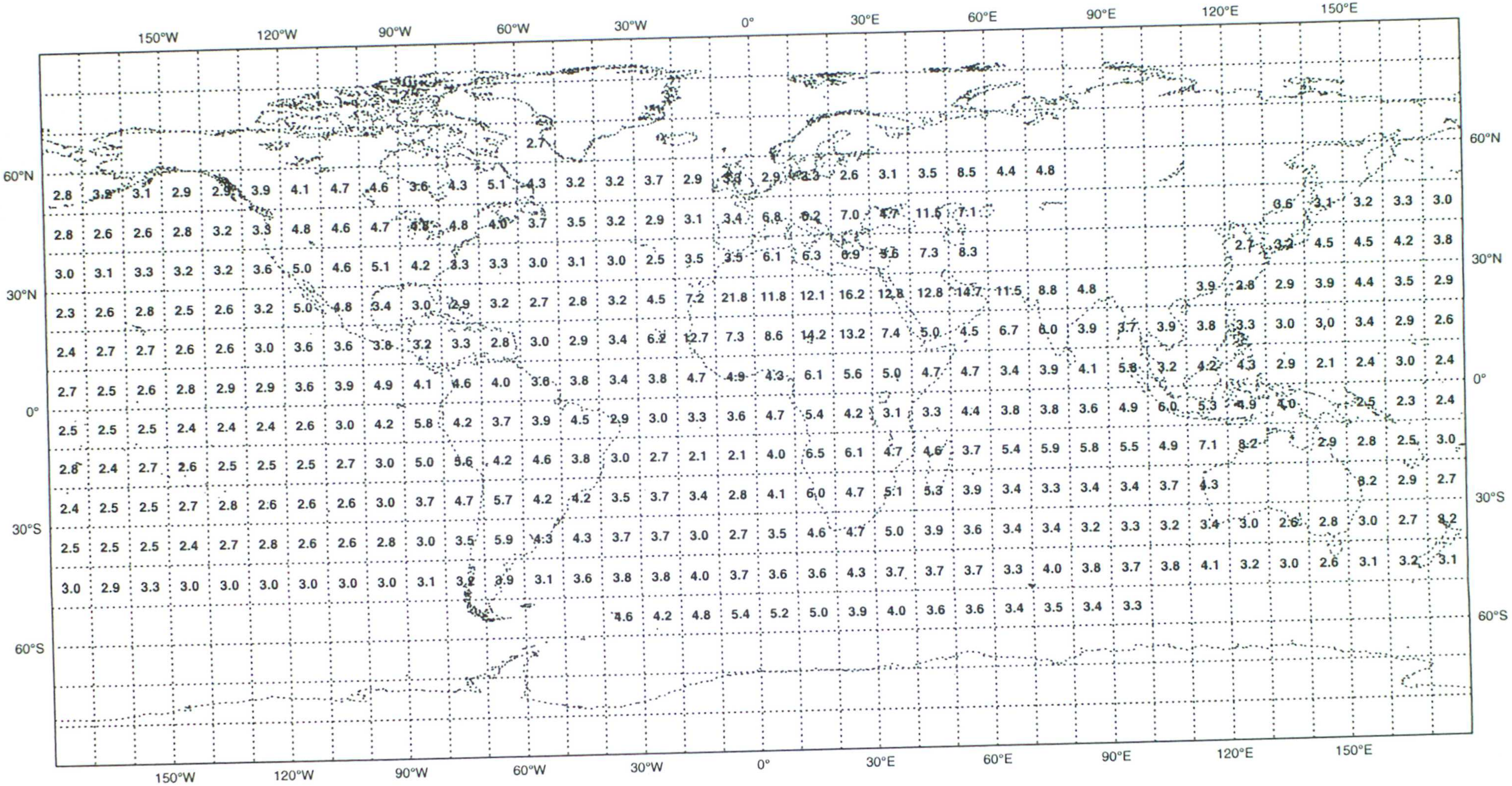

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
2.7
2.8 3.8 3.1 2.9 2.9 3.9 4.1 4.7 4.6 3.6 4.3 5.1 4.3 3.2 3.2 3.7 2.9 3.8 2.9 4.3 2.6 3.1 3.5 8.5 4.4 4.8
2.8 2.6 2.6 2.8 3.2 3.3 4.8 4.6 4.7 4.8 4.8 4.0 3.7 3.5 3.2 2.9 3.1 3.4 6.8 6.2 7.0 4.7 11.5 7.1 6.6 3.1 3.2 3.3 3.0
3.0 3.1 3.3 3.2 3.2 3.6 5.0 4.6 5.1 4.2 3.3 3.3 3.0 3.1 3.0 2.5 3.5 3.5 6.1 6.3 6.9 5.6 7.3 8.3 2.7 3.2 4.5 4.5 4.2 3.8
2.3 2.6 2.8 2.5 2.6 3.2 5.0 4.8 3.4 3.0 2.9 3.2 2.7 2.8 3.2 4.5 7.2 21.8 11.8 12.1 16.2 12.8 12.8 14.7 11.5 8.8 4.8 3.9 2.8 2.9 3.9 4.4 3.5 2.9
2.4 2.7 2.7 2.6 2.6 3.0 3.6 3.6 3.8 3.2 3.3 2.8 3.0 2.9 3.4 6.2 12.7 7.3 8.6 14.2 13.2 7.4 5.0 4.5 6.7 6.0 3.9 3.7 3.9 3.8 3.3 3.0 3.0 3.4 2.9 2.6
2.7 2.5 2.6 2.8 2.9 2.9 3.6 3.9 4.9 4.1 4.6 4.0 3.6 3.8 3.4 3.8 4.7 4.9 4.3 6.1 5.6 5.0 4.7 4.7 3.4 3.9 4.1 5.8 3.2 4.2 4.3 2.9 2.1 2.4 3.0 2.4
2.5 2.5 2.5 2.4 2.4 2.4 2.6 3.0 4.2 5.8 4.2 3.7 3.9 4.5 2.9 3.0 3.3 3.6 4.7 5.4 4.2 3.1 3.3 4.4 3.8 3.8 3.6 4.9 6.0 5.3 4.9 4.0 2.5 2.3 2.4
2.8 2.4 2.7 2.6 2.5 2.5 2.5 2.7 3.0 5.0 5.6 4.2 4.6 3.8 3.0 2.7 2.1 2.1 4.0 6.5 6.1 4.7 4.6 3.7 5.4 5.9 5.8 5.5 4.9 7.1 8.2 2.9 2.8 2.5 3.0
2.4 2.5 2.5 2.7 2.8 2.6 2.6 2.6 3.0 3.7 4.7 5.7 4.2 4.2 3.5 3.7 3.4 2.8 4.1 6.0 4.7 5.1 5.3 3.9 3.4 3.3 3.4 3.4 3.7 4.3 8.2 2.9 2.7
2.5 2.5 2.5 2.4 2.7 2.8 2.6 2.6 2.8 3.0 3.5 5.9 4.3 4.3 3.7 3.7 3.0 2.7 3.5 4.6 4.7 5.0 3.9 3.6 3.4 3.4 3.2 3.3 3.2 3.4 3.0 2.6 2.8 3.0 2.7 8.2
3.0 2.9 3.3 3.0 3.0 3.0 3.0 3.0 3.0 3.1 3.2 3.9 3.1 3.6 3.8 3.8 4.0 3.7 3.6 3.6 4.3 3.7 3.7 3.7 3.3 4.0 3.8 3.7 3.8 4.1 3.2 3.0 2.6 3.1 3.2 3.1
4.6 4.2 4.8 5.4 5.2 5.0 3.9 4.0 3.6 3.6 3.4 3.5 3.4 3.3

Figure 15. SATOB 401 - 700 hPa mean daily count. OCTOBER 2003
Global average number of observations in 24 hours = 13636

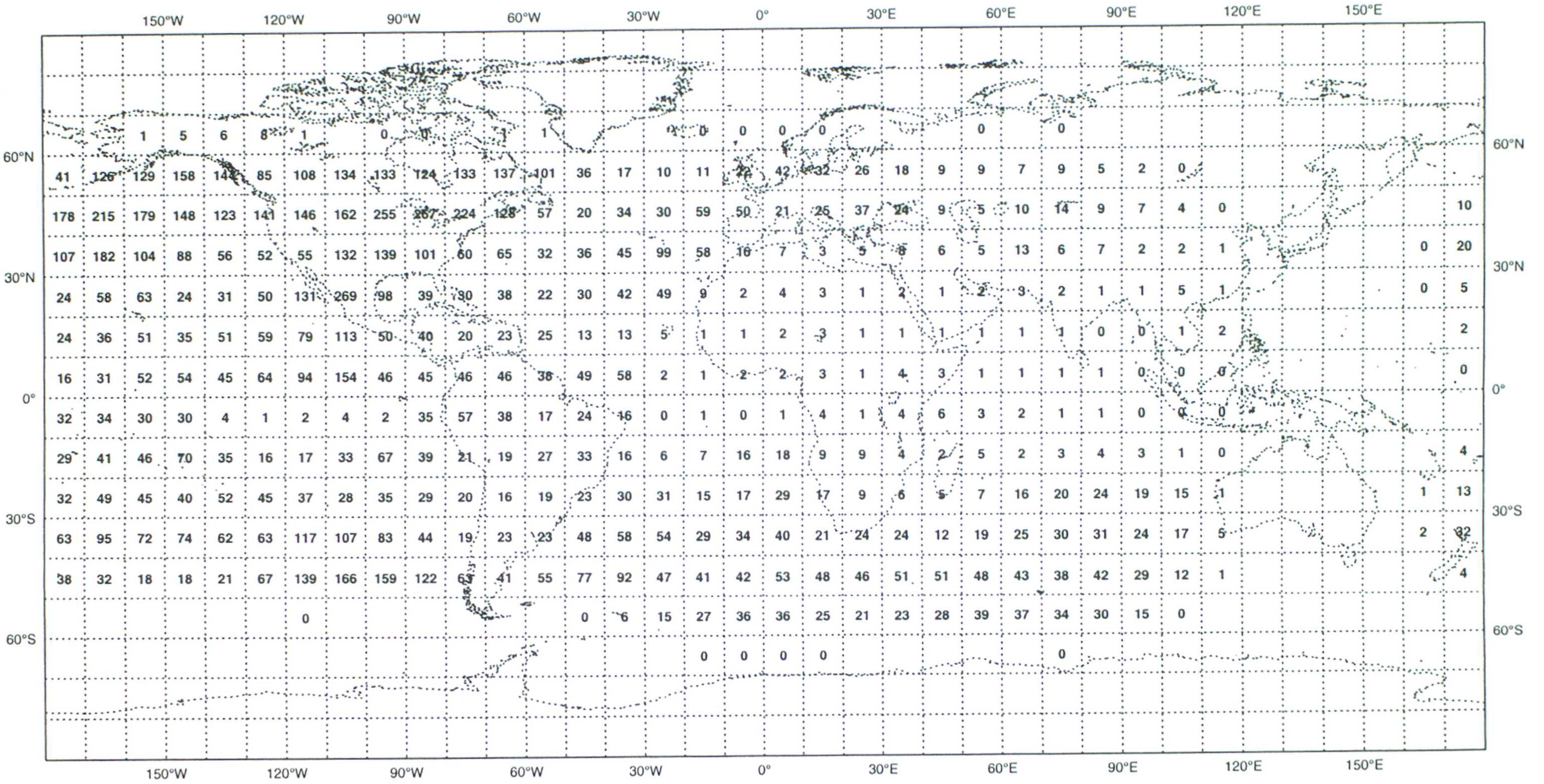

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
1 5 6 8 1 0 0 1 1 0 0 0 0 0 0
41 126 129 158 142 85 108 134 133 124 133 137 101 36 17 10 11 22 42 32 26 18 9 9 7 9 5 2 0
178 215 179 148 123 141 146 162 255 267 224 128 57 20 34 30 59 50 21 25 37 24 9 5 10 14 9 7 4 0 10
107 182 104 88 56 52 55 132 139 101 60 65 32 36 45 99 58 16 7 3 5 8 6 5 13 6 7 2 2 1 0 20
24 58 63 24 31 50 131 269 98 39 30 38 22 30 42 49 9 2 4 3 1 2 1 2 3 2 1 1 5 1 0 5
24 36 51 35 51 59 79 113 50 40 20 23 25 13 13 5 1 1 2 3 1 1 1 1 1 1 0 0 1 2 2
16 31 52 54 45 64 94 154 46 45 46 46 38 49 58 2 1 2 2 3 1 4 3 1 1 1 1 0 0 0 0
32 34 30 30 4 1 2 4 2 35 57 38 17 24 16 0 1 0 1 4 1 4 6 3 2 1 1 0 0 0
29 41 46 70 35 16 17 33 67 39 21 19 27 33 16 6 7 16 18 9 9 4 2 5 2 3 4 3 1 0 4
32 49 45 40 52 45 37 28 35 29 20 16 19 23 30 31 15 17 29 17 9 6 5 7 16 20 24 19 15 1 1 13
63 95 72 74 62 63 117 107 83 44 19 23 23 48 58 54 29 34 40 21 24 24 12 19 25 30 31 24 17 5 2 32
38 32 18 18 21 67 139 166 159 122 63 41 55 77 92 47 41 42 53 48 46 51 51 48 43 38 42 29 12 1 4
0 0 6 15 27 36 36 25 21 23 28 39 37 34 30 15 0
0 0 0 0 0

Figure 16. SATOB 401 - 700 hPa vector mean wind. OCTOBER 2003
All observations
Arrows are plotted where greater than 10 obs are present

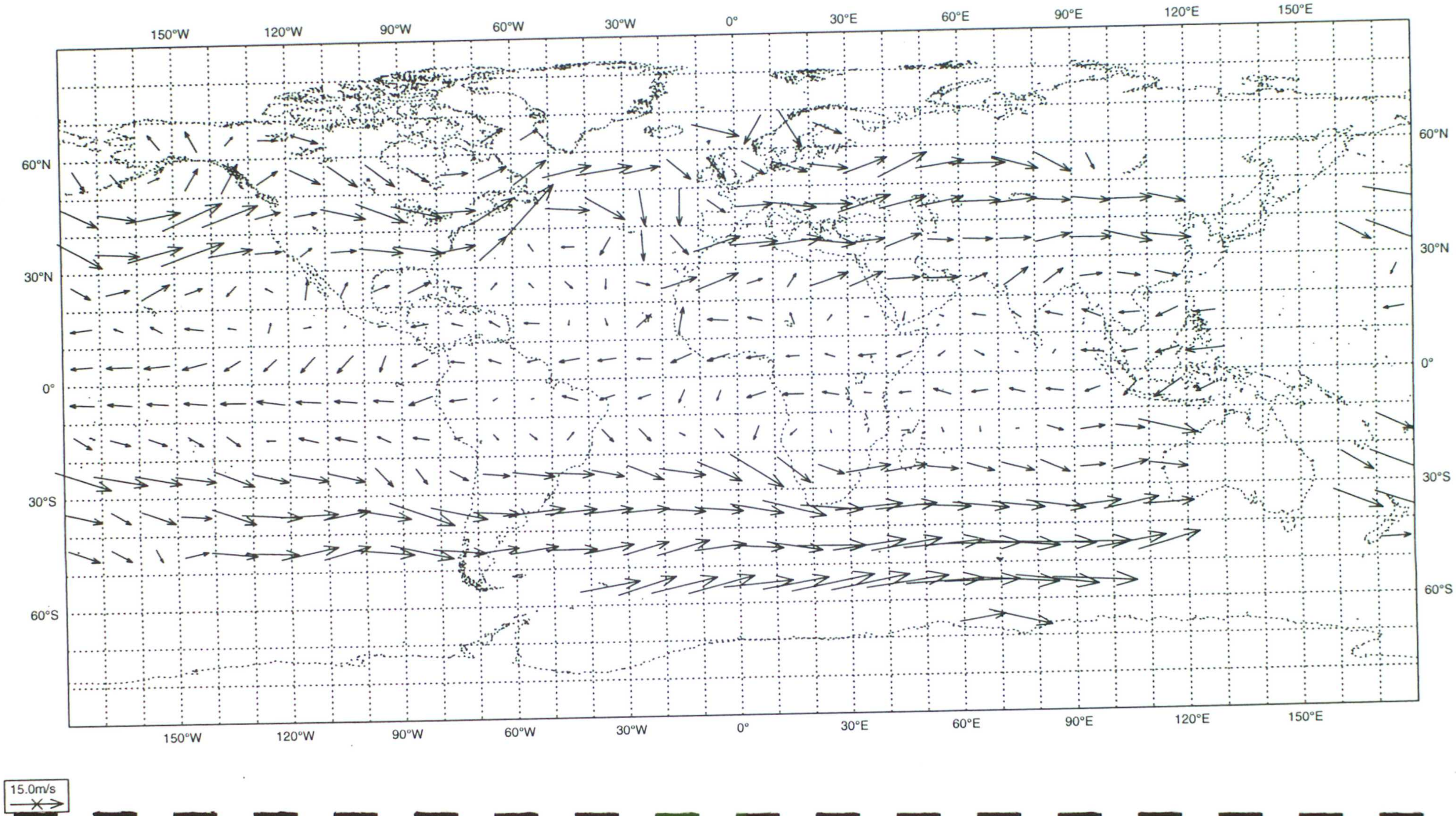

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 17. SATOB 401 - 700 hPa mean vector wind differences. OCTOBER 2003
All observations
Arrows are plotted where greater than 10 obs are present

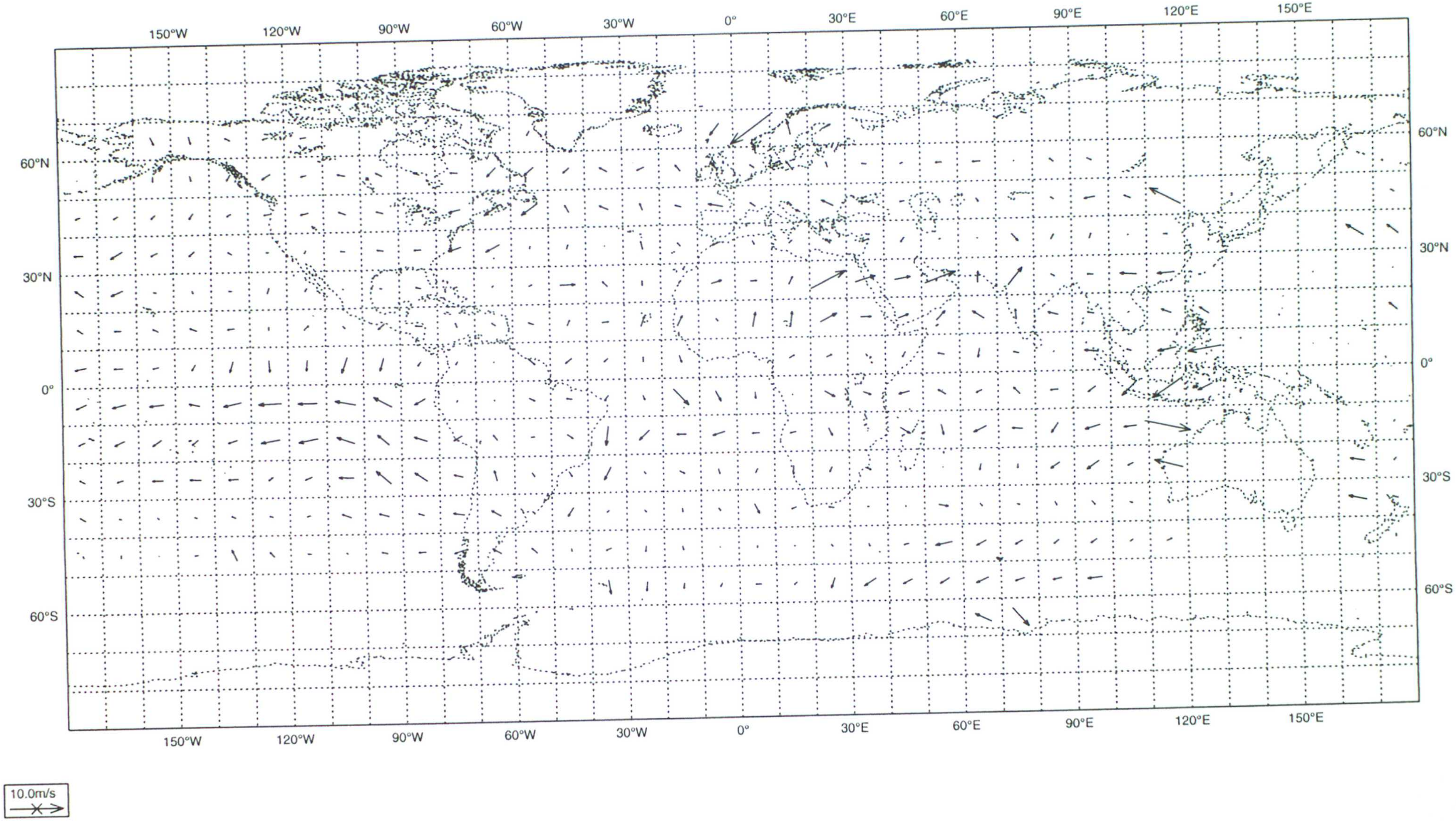

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0m/s

Figure 18. SATOB 401 - 700 hPa mean O-B speed differences (ms-1). OCTOBER 2003
All observations
Values are plotted where greater than 10 obs are present

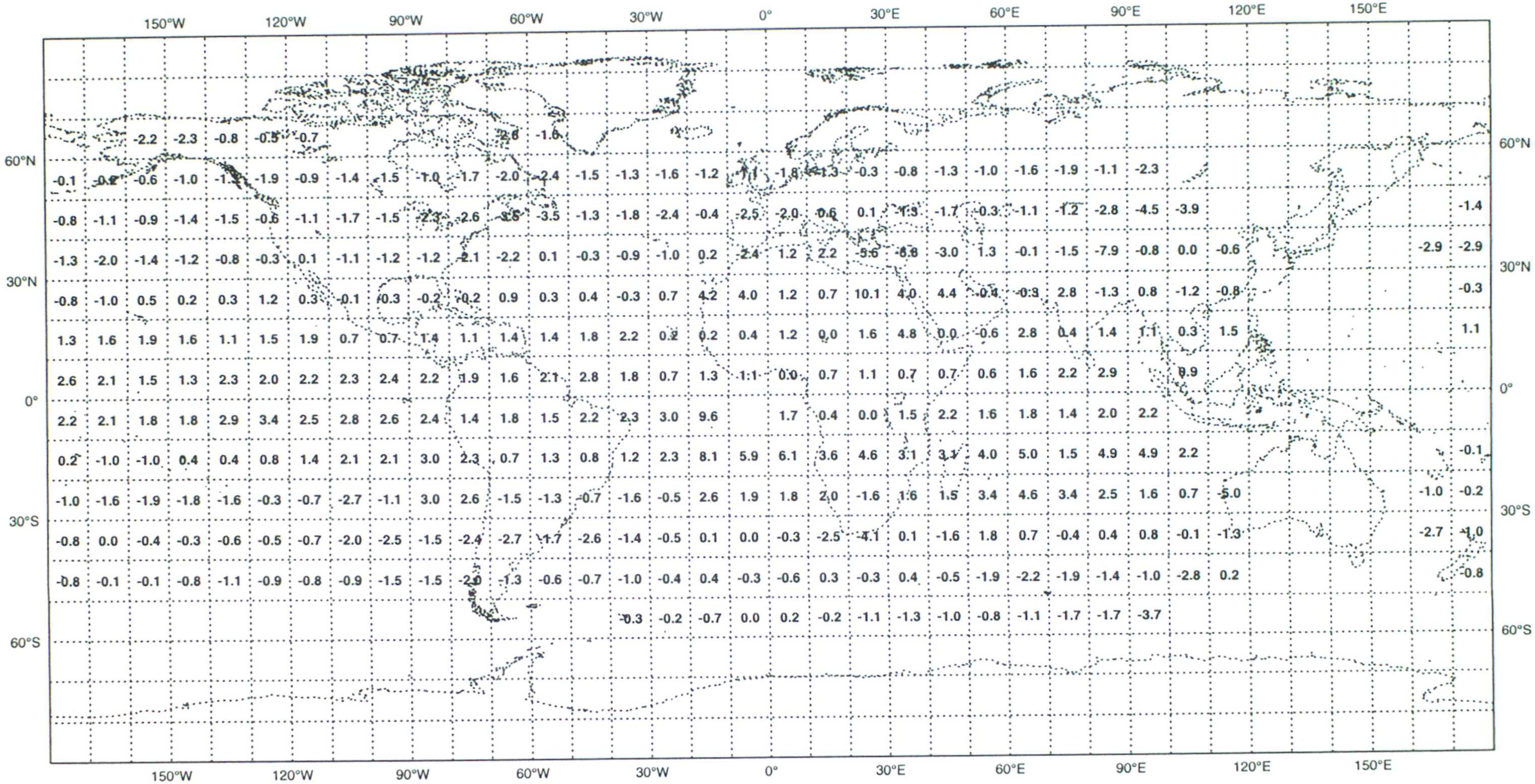

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
-2.2 -2.3 -0.8 -0.5 -0.7 -2.6 -1.6
-0.1 -0.2 -0.6 -1.0 -1.3 -1.9 -0.9 -1.4 -1.5 -1.0 -1.7 -2.0 -2.4 -1.5 -1.3 -1.6 -1.2 -1.1 -1.8 -1.3 -0.3 -0.8 -1.3 -1.0 -1.6 -1.9 -1.1 -2.3
-0.8 -1.1 -0.9 -1.4 -1.5 -0.6 -1.1 -1.7 -1.5 -2.3 -2.6 -3.6 -3.5 -1.3 -1.8 -2.4 -0.4 -2.5 -2.0 0.6 0.1 -1.3 -1.7 -0.3 -1.1 -1.2 -2.8 -4.5 -3.9 -1.4
-1.3 -2.0 -1.4 -1.2 -0.8 -0.3 0.1 -1.1 -1.2 -1.2 -2.1 -2.2 0.1 -0.3 -0.9 -1.0 0.2 2.4 1.2 2.2 -5.6 -6.8 -3.0 1.3 -0.1 -1.5 -7.9 -0.8 0.0 -0.6 -2.9 -2.9
-0.8 -1.0 0.5 0.2 0.3 1.2 0.3 -0.1 -0.3 -0.2 -0.2 0.9 0.3 0.4 -0.3 0.7 4.2 4.0 1.2 0.7 10.1 4.0 4.4 -0.4 -0.3 2.8 -1.3 0.8 -1.2 -0.8 -0.3
1.3 1.6 1.9 1.6 1.1 1.5 1.9 0.7 0.7 1.4 1.1 1.4 1.4 1.8 2.2 0.2 0.2 0.4 1.2 0.0 1.6 4.8 0.0 -0.6 2.8 0.4 1.4 1.1 0.3 1.5 1.1
2.6 2.1 1.5 1.3 2.3 2.0 2.2 2.3 2.4 2.2 1.9 1.6 2.1 2.8 1.8 0.7 1.3 1.1 0.0 0.7 1.1 0.7 0.7 0.6 1.6 2.2 2.9 0.9
2.2 2.1 1.8 1.8 2.9 3.4 2.5 2.8 2.6 2.4 1.4 1.8 1.5 2.2 2.3 3.0 9.6 1.7 0.4 0.0 1.5 2.2 1.6 1.8 1.4 2.0 2.2
0.2 -1.0 -1.0 0.4 0.4 0.8 1.4 2.1 2.1 3.0 2.3 0.7 1.3 0.8 1.2 2.3 8.1 5.9 6.1 3.6 4.6 3.1 3.1 4.0 5.0 1.5 4.9 4.9 2.2 -0.1
-1.0 -1.6 -1.9 -1.8 -1.6 -0.3 -0.7 -2.7 -1.1 3.0 2.6 -1.5 -1.3 -0.7 -1.6 -0.5 2.6 1.9 1.8 2.0 -1.6 1.6 1.5 3.4 4.6 3.4 2.5 1.6 0.7 -5.0 -1.0 -0.2
-0.8 0.0 -0.4 -0.3 -0.6 -0.5 -0.7 -2.0 -2.5 -1.5 -2.4 -2.7 -1.7 -2.6 -1.4 -0.5 0.1 0.0 -0.3 -2.5 -4.1 0.1 -1.6 1.8 0.7 -0.4 0.4 0.8 -0.1 -1.3 -2.7 -1.0
-0.8 -0.1 -0.1 -0.8 -1.1 -0.9 -0.8 -0.9 -1.5 -1.5 -2.0 -1.3 -0.6 -0.7 -1.0 -0.4 0.4 -0.3 -0.6 0.3 -0.3 0.4 -0.5 -1.9 -2.2 -1.9 -1.4 -1.0 -2.8 0.2 -0.8
-0.3 -0.2 -0.7 0.0 0.2 -0.2 -1.1 -1.3 -1.0 -0.8 -1.1 -1.7 -1.7 -3.7

Figure 19. SATOB 401 - 700 hPa mean RMS O-B vector differences (ms-1). OCTOBER 2003
All observations
Values are plotted where greater than 10 obs are present

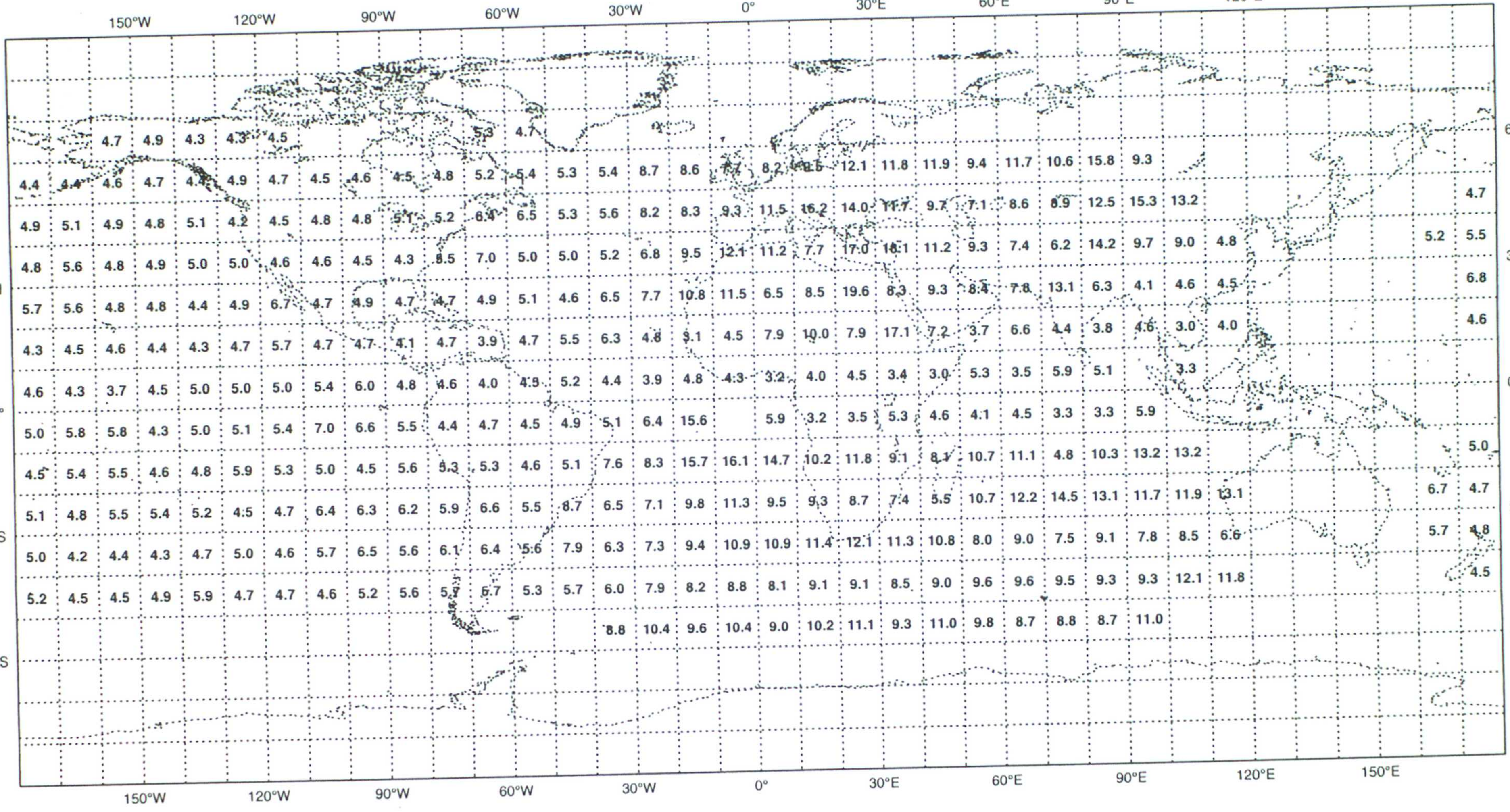

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
4.7 4.9 4.3 4.3 4.5 5.3 4.7
4.4 4.4 4.6 4.7 4.4 4.9 4.7 4.5 4.6 4.5 4.8 5.2 5.4 5.3 5.4 8.7 8.6 7.7 8.2 8.5 12.1 11.8 11.9 9.4 11.7 10.6 15.8 9.3
4.9 5.1 4.9 4.8 5.1 4.2 4.5 4.8 4.8 5.1 5.2 6.4 6.5 5.3 5.6 8.2 8.3 9.3 11.5 16.2 14.0 11.7 9.7 7.1 8.6 8.9 12.5 15.3 13.2 4.7
4.8 5.6 4.8 4.9 5.0 5.0 4.6 4.6 4.5 4.3 8.5 7.0 5.0 5.0 5.2 6.8 9.5 12.1 11.2 7.7 17.0 18.1 11.2 9.3 7.4 6.2 14.2 9.7 9.0 4.8 5.2 5.5
5.7 5.6 4.8 4.8 4.4 4.9 6.7 4.7 4.9 4.7 4.7 4.9 5.1 4.6 6.5 7.7 10.8 11.5 6.5 8.5 19.6 8.3 9.3 8.4 7.8 13.1 6.3 4.1 4.6 4.5 6.8
4.3 4.5 4.6 4.4 4.3 4.7 5.7 4.7 4.7 4.1 4.7 3.9 4.7 5.5 6.3 4.8 9.1 4.5 7.9 10.0 7.9 17.1 7.2 3.7 6.6 4.4 3.8 4.6 3.0 4.0 4.6
4.6 4.3 3.7 4.5 5.0 5.0 5.0 5.4 6.0 4.8 4.6 4.0 4.9 5.2 4.4 3.9 4.8 4.3 3.2 4.0 4.5 3.4 3.0 5.3 3.5 5.9 5.1 3.3
5.0 5.8 5.8 4.3 5.0 5.1 5.4 7.0 6.6 5.5 4.4 4.7 4.5 4.9 5.1 6.4 15.6 5.9 3.2 3.5 5.3 4.6 4.1 4.5 3.3 3.3 5.9
4.5 5.4 5.5 4.6 4.8 5.9 5.3 5.0 4.5 5.6 5.3 5.3 4.6 5.1 7.6 8.3 15.7 16.1 14.7 10.2 11.8 9.1 8.1 10.7 11.1 4.8 10.3 13.2 13.2 5.0
5.1 4.8 5.5 5.4 5.2 4.5 4.7 6.4 6.3 6.2 5.9 6.6 5.5 8.7 6.5 7.1 9.8 11.3 9.5 9.3 8.7 7.4 5.5 10.7 12.2 14.5 13.1 11.7 11.9 13.1 6.7 4.7
5.0 4.2 4.4 4.3 4.7 5.0 4.6 5.7 6.5 5.6 6.1 6.4 5.6 7.9 6.3 7.3 9.4 10.9 10.9 11.4 12.1 11.3 10.8 8.0 9.0 7.5 9.1 7.8 8.5 6.6 5.7 4.8
5.2 4.5 4.5 4.9 5.9 4.7 4.7 4.6 5.2 5.6 5.7 5.7 5.3 5.7 6.0 7.9 8.2 8.8 8.1 9.1 9.1 8.5 9.0 9.6 9.6 9.5 9.3 9.3 12.1 11.8 4.5
8.8 10.4 9.6 10.4 9.0 10.2 11.1 9.3 11.0 9.8 8.7 8.8 8.7 11.0

Figure 20. SATOB 101 - 400 hPa mean daily count. OCTOBER 2003
Global average number of observations in 24 hours = 203979

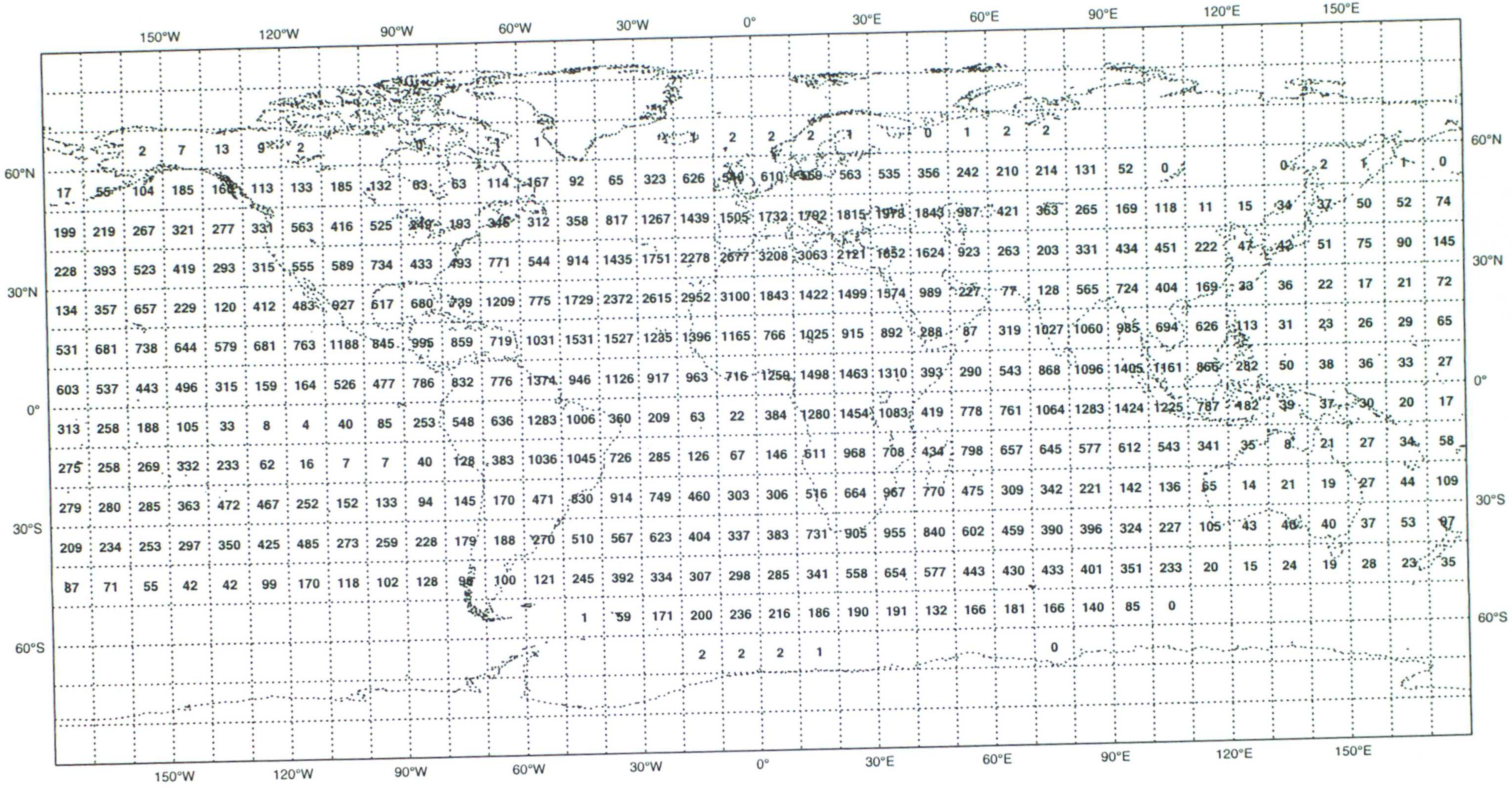

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
2 7 13 9 2 0 1 1 1 2 2 2 1 0 1 2 2
17 55 104 185 162 113 133 185 132 63 63 114 167 92 65 323 626 540 610 559 563 535 356 242 210 214 131 52 0 0 2 1 1 0
199 219 267 321 277 331 563 416 525 249 193 346 312 358 817 1267 1439 1505 1732 1792 1815 1978 1843 987 421 363 265 169 118 11 15 34 37 50 52 74
228 393 523 419 293 315 555 589 734 433 493 771 544 914 1435 1751 2278 2677 3208 3063 2121 1652 1624 923 263 203 331 434 451 222 47 42 51 75 90 145
134 357 657 229 120 412 483 927 617 680 739 1209 775 1729 2372 2615 2952 3100 1843 1422 1499 1574 989 227 77 128 565 724 404 169 33 36 22 17 21 72
531 681 738 644 579 681 763 1188 845 995 859 719 1031 1531 1527 1235 1396 1165 766 1025 915 892 288 87 319 1027 1060 985 694 626 113 31 23 26 29 65
603 537 443 496 315 159 164 526 477 786 832 776 1374 946 1126 917 963 716 1258 1498 1463 1310 393 290 543 868 1096 1405 1161 866 282 50 38 36 33 27
313 258 188 105 33 8 4 40 85 253 548 636 1283 1006 360 209 63 22 384 1280 1454 1083 419 778 761 1064 1283 1424 1225 787 482 39 37 30 20 17
275 258 269 332 233 62 16 7 7 40 128 383 1036 1045 726 285 126 67 146 611 968 708 434 798 657 645 577 612 543 341 35 8 21 27 34 58
279 280 285 363 472 467 252 152 133 94 145 170 471 830 914 749 460 303 306 516 664 967 770 475 309 342 221 142 136 65 14 21 19 27 44 109
209 234 253 297 350 425 485 273 259 228 179 188 270 510 567 623 404 337 383 731 905 955 840 602 459 390 396 324 227 105 43 46 40 37 53 97
87 71 55 42 42 99 170 118 102 128 98 100 121 245 392 334 307 298 285 341 558 654 577 443 430 433 401 351 233 20 15 24 19 28 23 35
1 59 171 200 236 216 186 190 191 132 166 181 166 140 85 0
2 2 2 1 0

Figure 21. SATOB 101 - 400 hPa vector mean wind. OCTOBER 2003
All observations
Arrows are plotted where greater than 10 obs are present

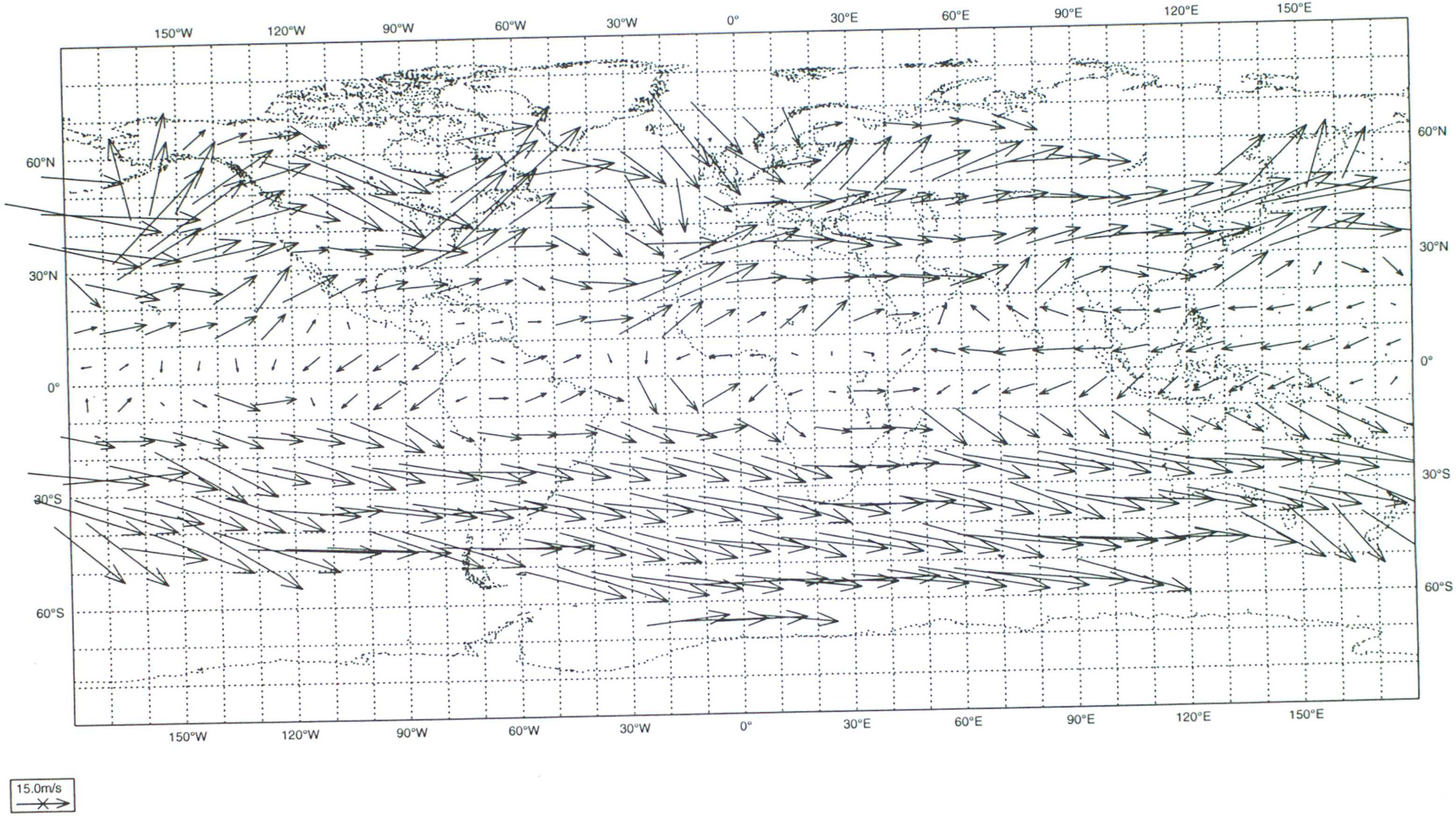

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 22. SATOB 101 - 400 hPa mean vector wind differences. OCTOBER 2003
All observations
Arrows are plotted where greater than 10 obs are present

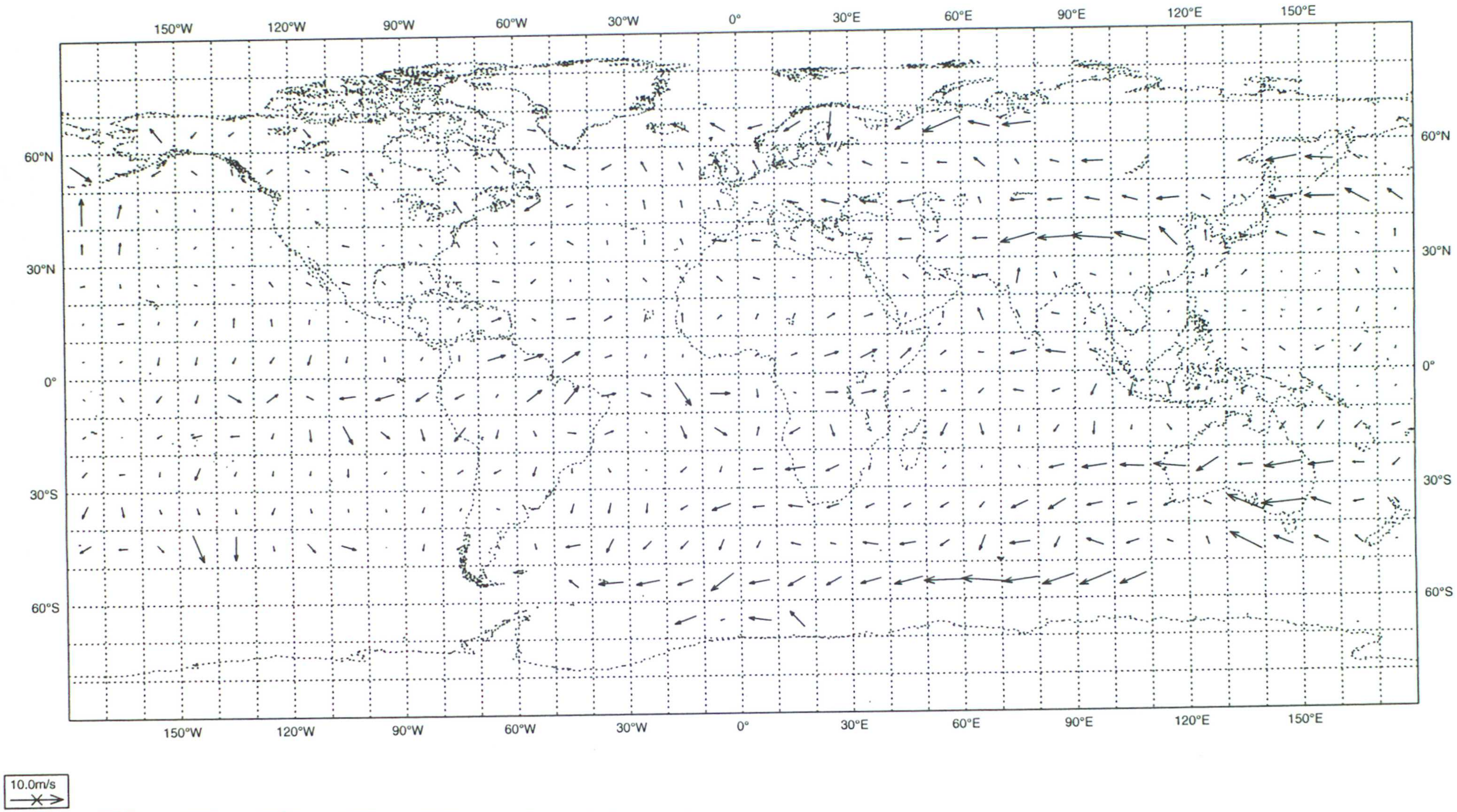

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0m/s

Figure 23. SATOB 101 - 400 hPa mean O-B speed differences (ms-1). OCTOBER 2003
All observations
Values are plotted where greater than 10 obs are present

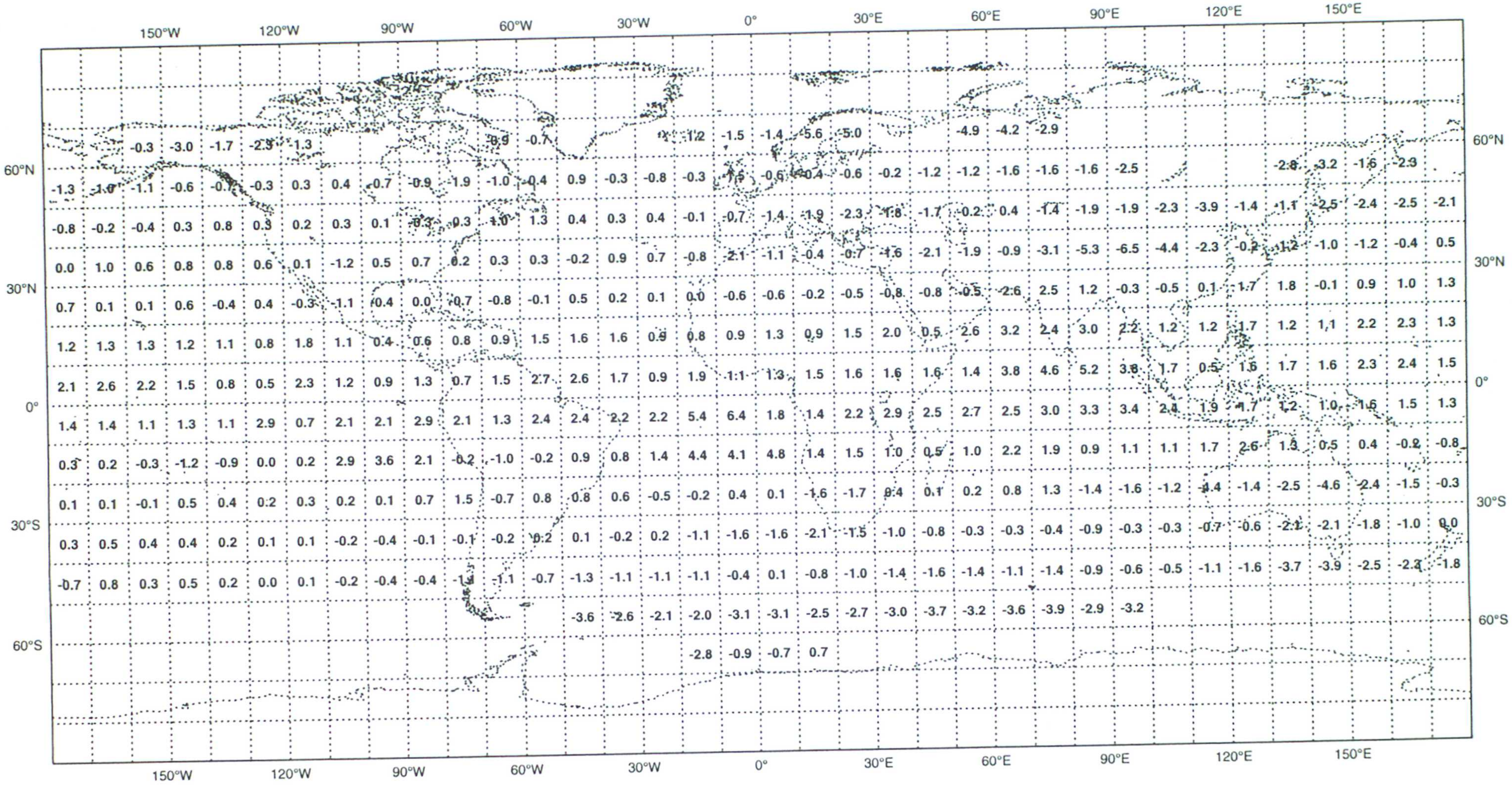
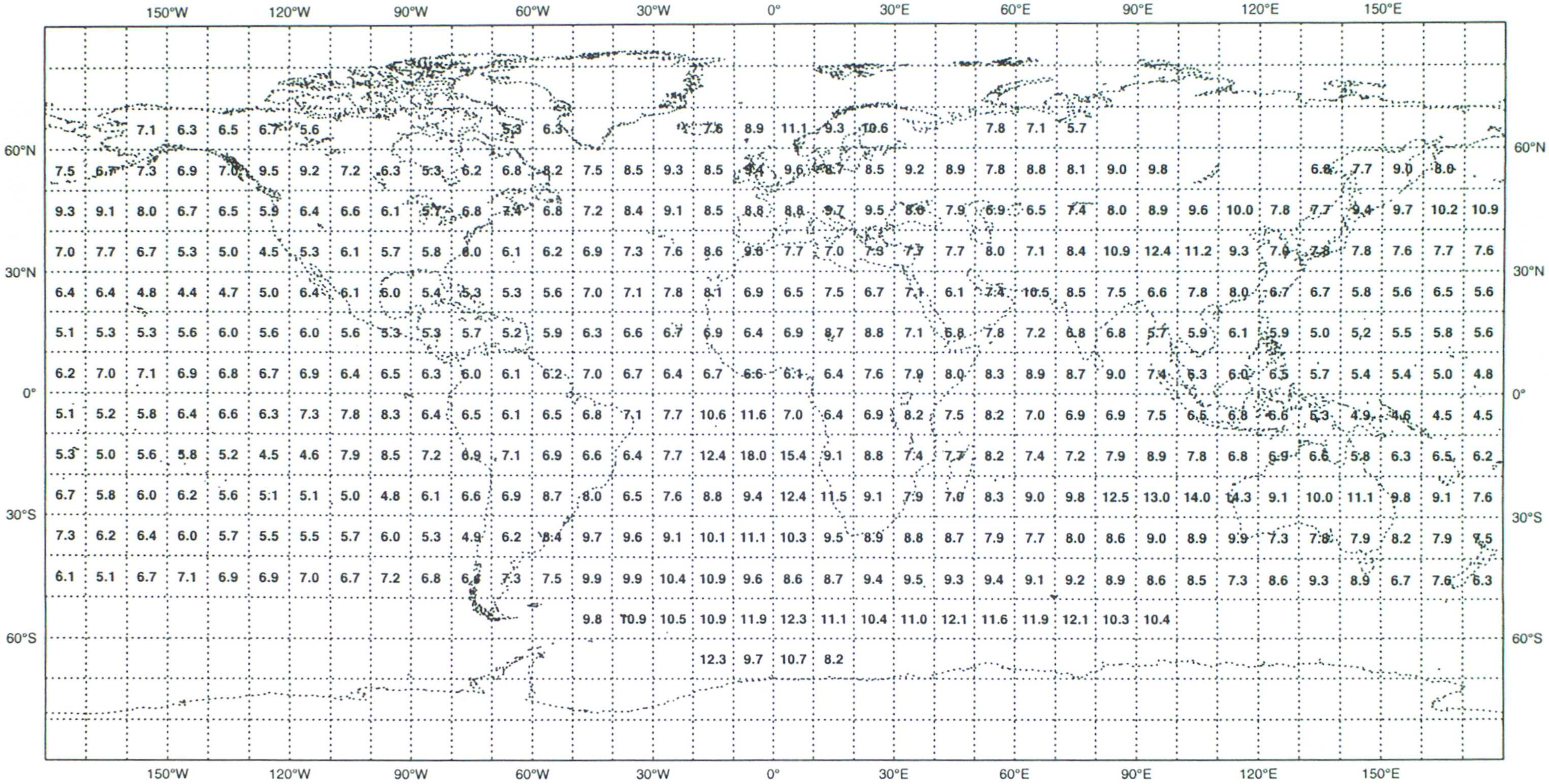

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
-0.3 -3.0 -1.7 -2.3 -1.3 -0.9 -0.7 1.2 -1.5 -1.4 -5.6 -5.0 -4.9 -4.2 -2.9
-1.3 -1.0 -1.1 -0.6 -0.7 -0.3 0.3 0.4 -0.7 -0.9 -1.9 -1.0 -0.4 0.9 -0.3 -0.8 -0.3 1.5 -0.6 -0.4 -0.6 -0.2 -1.2 -1.2 -1.6 -1.6 -1.6 -2.5 -2.8 -3.2 -1.6 -2.3
-0.8 -0.2 -0.4 0.3 0.8 0.3 0.2 0.3 0.1 -0.3 0.3 1.0 1.3 0.4 0.3 0.4 -0.1 -0.7 -1.4 -1.9 -2.3 -1.8 -1.7 -0.2 0.4 -1.4 -1.9 -1.9 -2.3 -3.9 -1.4 -1.1 -2.5 -2.4 -2.5 -2.1
0.0 1.0 0.6 0.8 0.8 0.6 0.1 -1.2 0.5 0.7 0.2 0.3 0.3 -0.2 0.9 0.7 -0.8 -2.1 -1.1 -0.4 -0.7 -1.6 -2.1 -1.9 -0.9 -3.1 -5.3 -6.5 -4.4 -2.3 -0.2 -1.2 -1.0 -1.2 -0.4 0.5
0.7 0.1 0.1 0.6 -0.4 0.4 -0.3 -1.1 0.4 0.0 -0.7 -0.8 -0.1 0.5 0.2 0.1 0.0 -0.6 -0.6 -0.2 -0.5 -0.8 -0.8 -0.5 -2.6 2.5 1.2 -0.3 -0.5 0.1 1.7 1.8 -0.1 0.9 1.0 1.3
1.2 1.3 1.3 1.2 1.1 0.8 1.8 1.1 0.4 0.6 0.8 0.9 1.5 1.6 1.6 0.9 0.8 0.9 1.3 0.9 1.5 2.0 0.5 2.6 3.2 2.4 3.0 2.2 1.2 1.2 1.7 1.2 1.1 2.2 2.3 1.3
2.1 2.6 2.2 1.5 0.8 0.5 2.3 1.2 0.9 1.3 0.7 1.5 2.7 2.6 1.7 0.9 1.9 1.1 1.3 1.5 1.6 1.6 1.6 1.4 3.8 4.6 5.2 3.8 1.7 0.5 1.6 1.7 1.6 2.3 2.4 1.5
1.4 1.4 1.1 1.3 1.1 2.9 0.7 2.1 2.1 2.9 2.1 1.3 2.4 2.4 2.2 2.2 5.4 6.4 1.8 1.4 2.2 2.9 2.5 2.7 2.5 3.0 3.3 3.4 2.4 1.9 1.7 1.2 1.0 1.6 1.5 1.3
0.3 0.2 -0.3 -1.2 -0.9 0.0 0.2 2.9 3.6 2.1 -0.2 -1.0 -0.2 0.9 0.8 1.4 4.4 4.1 4.8 1.4 1.5 1.0 0.5 1.0 2.2 1.9 0.9 1.1 1.1 1.7 2.6 1.3 0.5 0.4 -0.2 -0.8
0.1 0.1 -0.1 0.5 0.4 0.2 0.3 0.2 0.1 0.7 1.5 -0.7 0.8 0.8 0.6 -0.5 -0.2 0.4 0.1 -1.6 -1.7 0.4 0.1 0.2 0.8 1.3 -1.4 -1.6 -1.2 -4.4 -1.4 -2.5 -4.6 -2.4 -1.5 -0.3
0.3 0.5 0.4 0.4 0.2 0.1 0.1 -0.2 -0.4 -0.1 -0.1 -0.2 0.2 0.1 -0.2 0.2 -1.1 -1.6 -1.6 -2.1 -1.5 -1.0 -0.8 -0.3 -0.3 -0.4 -0.9 -0.3 -0.3 -0.7 -0.6 -2.1 -2.1 -1.8 -1.0 0.0
-0.7 0.8 0.3 0.5 0.2 0.0 0.1 -0.2 -0.4 -0.4 -1.1 -1.1 -0.7 -1.3 -1.1 -1.1 -1.1 -0.4 0.1 -0.8 -1.0 -1.4 -1.6 -1.4 -1.1 -1.4 -0.9 -0.6 -0.5 -1.1 -1.6 -3.7 -3.9 -2.5 -2.3 -1.8
-3.6 -2.6 -2.1 -2.0 -3.1 -3.1 -2.5 -2.7 -3.0 -3.7 -3.2 -3.6 -3.9 -2.9 -3.2
-2.8 -0.9 -0.7 0.7

Figure 24. SATOB 101 - 400 hPa mean RMS O-B vector differences (ms-1). OCTOBER 2003
All observations
Values are plotted where greater than 10 obs are present


150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
7.1 6.3 6.5 6.7 5.6 5.3 6.3 7.6 8.9 11.1 9.3 10.6 7.8 7.1 5.7
7.5 6.7 7.3 6.9 7.0 9.5 9.2 7.2 6.3 5.3 6.2 6.8 8.2 7.5 8.5 9.3 8.5 9.4 9.6 8.7 8.5 9.2 8.9 7.8 8.8 8.1 9.0 9.8 6.8 7.7 9.0 8.0
9.3 9.1 8.0 6.7 6.5 5.9 6.4 6.6 6.1 5.7 6.8 7.4 6.8 7.2 8.4 9.1 8.5 8.8 8.8 9.7 9.5 8.6 7.9 6.9 6.5 7.4 8.0 8.9 9.6 10.0 7.8 7.7 9.4 9.7 10.2 10.9
7.0 7.7 6.7 5.3 5.0 4.5 5.3 6.1 5.7 5.8 6.0 6.1 6.2 6.9 7.3 7.6 8.6 9.6 7.7 7.0 7.9 7.7 7.7 8.0 7.1 8.4 10.9 12.4 11.2 9.3 7.9 7.8 7.8 7.6 7.7 7.6
6.4 6.4 4.8 4.4 4.7 5.0 6.4 6.1 6.0 5.4 5.3 5.3 5.6 7.0 7.1 7.8 8.1 6.9 6.5 7.5 6.7 7.1 6.1 7.4 10.5 8.5 7.5 6.6 7.8 8.0 6.7 6.7 5.8 5.6 6.5 5.6
5.1 5.3 5.3 5.6 6.0 5.6 6.0 5.6 5.3 5.3 5.7 5.2 5.9 6.3 6.6 6.7 6.9 6.4 6.9 8.7 8.8 7.1 6.8 7.8 7.2 6.8 6.8 5.7 5.9 6.1 5.9 5.0 5.2 5.5 5.8 5.6
6.2 7.0 7.1 6.9 6.8 6.7 6.9 6.4 6.5 6.3 6.0 6.1 6.2 7.0 6.7 6.4 6.7 6.6 6.1 6.4 7.6 7.9 8.0 8.3 8.9 8.7 9.0 7.4 6.3 6.0 6.5 5.7 5.4 5.4 5.0 4.8
5.1 5.2 5.8 6.4 6.6 6.3 7.3 7.8 8.3 6.4 6.5 6.1 6.5 6.8 7.1 7.7 10.6 11.6 7.0 6.4 6.9 8.2 7.5 8.2 7.0 6.9 6.9 7.5 6.5 6.8 6.6 5.3 4.9 4.6 4.5 4.5
5.3 5.0 5.6 5.8 5.2 4.5 4.6 7.9 8.5 7.2 6.9 7.1 6.9 6.6 6.4 7.7 12.4 18.0 15.4 9.1 8.8 7.4 7.7 8.2 7.4 7.2 7.9 8.9 7.8 6.8 6.9 6.6 5.8 6.3 6.5 6.2
6.7 5.8 6.0 6.2 5.6 5.1 5.1 5.0 4.8 6.1 6.6 6.9 8.7 8.0 6.5 7.6 8.8 9.4 12.4 11.5 9.1 7.9 7.0 8.3 9.0 9.8 12.5 13.0 14.0 14.3 9.1 10.0 11.1 9.8 9.1 7.6
7.3 6.2 6.4 6.0 5.7 5.5 5.5 5.7 6.0 5.3 4.9 6.2 8.4 9.7 9.6 9.1 10.1 11.1 10.3 9.5 8.9 8.8 8.7 7.9 7.7 8.0 8.6 9.0 8.9 9.9 7.3 7.8 7.9 8.2 7.9 7.5
6.1 5.1 6.7 7.1 6.9 6.9 7.0 6.7 7.2 6.8 6.6 7.3 7.5 9.9 9.9 10.4 10.9 9.6 8.6 8.7 9.4 9.5 9.3 9.4 9.1 9.2 8.9 8.6 8.5 7.3 8.6 9.3 8.9 6.7 7.6 6.3
9.8 10.9 10.5 10.9 11.9 12.3 11.1 10.4 11.0 12.1 11.6 11.9 12.1 10.3 10.4
12.3 9.7 10.7 8.2

MONITORING OF SATELLITE TEMPERATURES

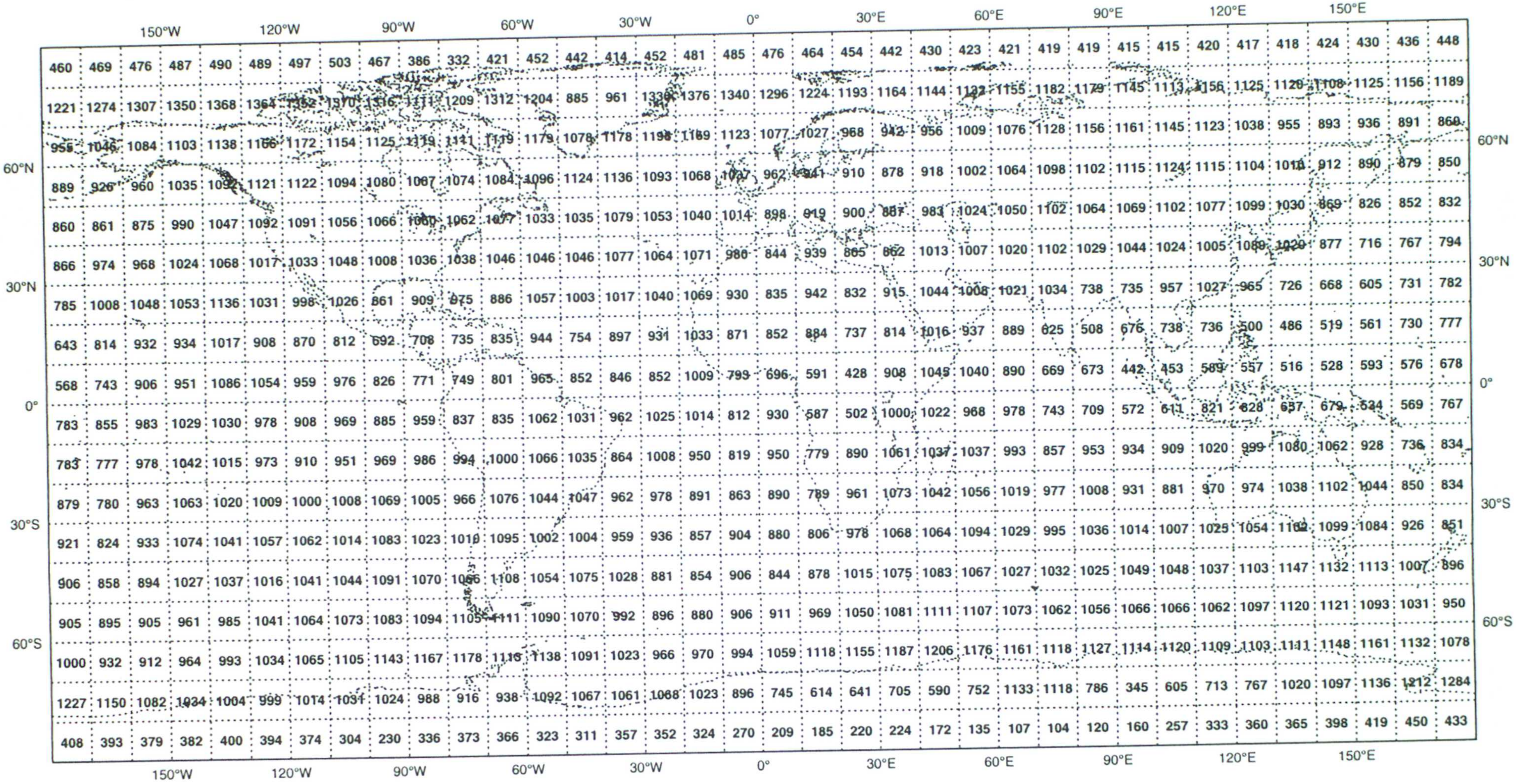
MONITORING CENTRE: EXETER

MONTH: Oct 03

Monitoring procedures

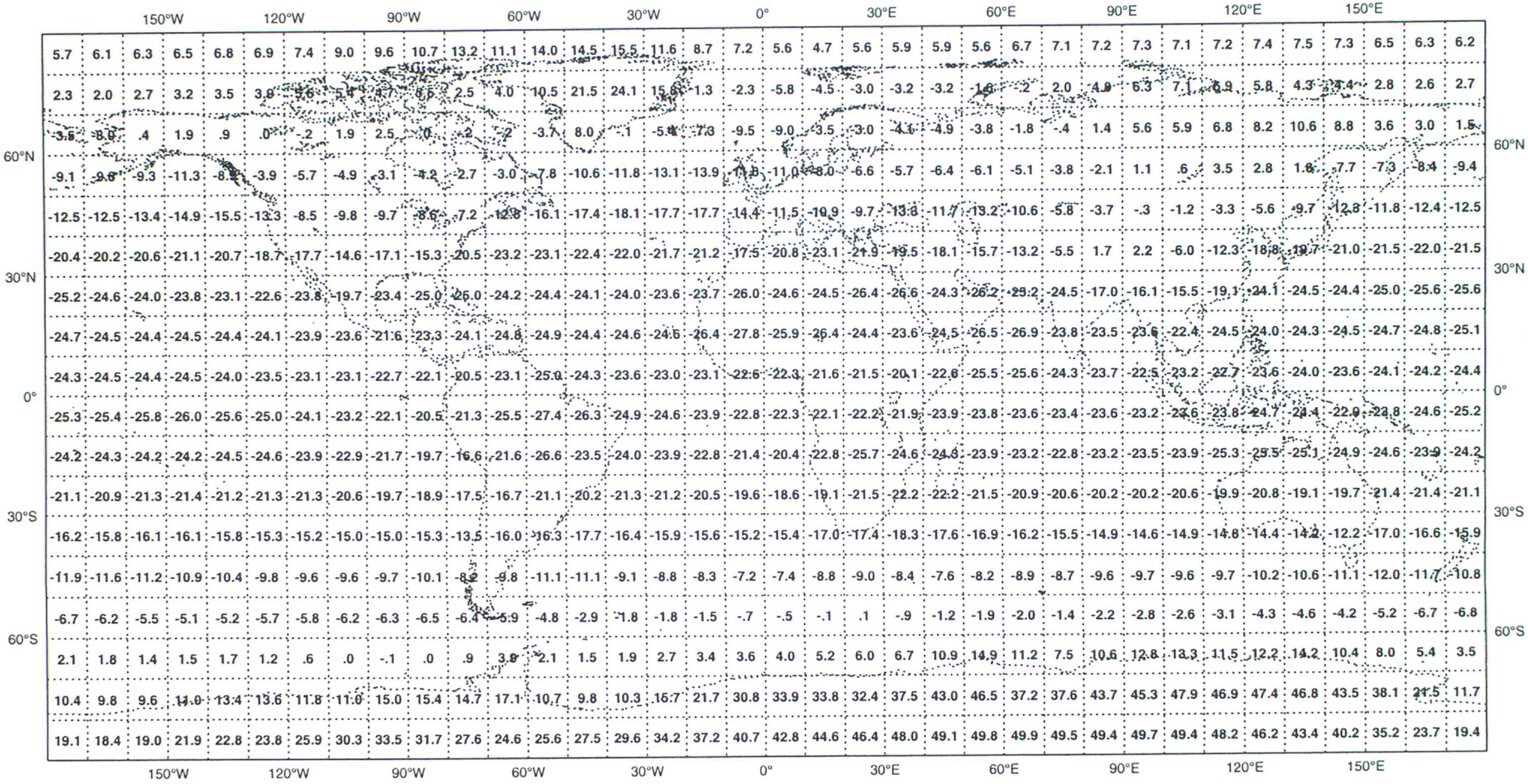
Period	:One calendar month.
Data monitored	:Reports from NOAA-15, NOAA-16 and NOAA-17.
Standard of comparison	:Background field from UKMO global model.
Selection Criteria	:All soundings.
Data Extracted	:Sounding channels (and approximate weighting function peaks, hPa) HIRS8 (Surface) HIRS15 (700) HIRS11 (500-700) HIRS4 (400) AMSUA5 (700) AMSUA7 (300) AMSUA9 (100)
	:Mean and standard deviation observation-minus-background brightness temperature differences

Figure 25. ATOVS mean daily count. OCTOBER 2003
NOAA15, using all observations
Global average number of observations in 24 hours = 588915



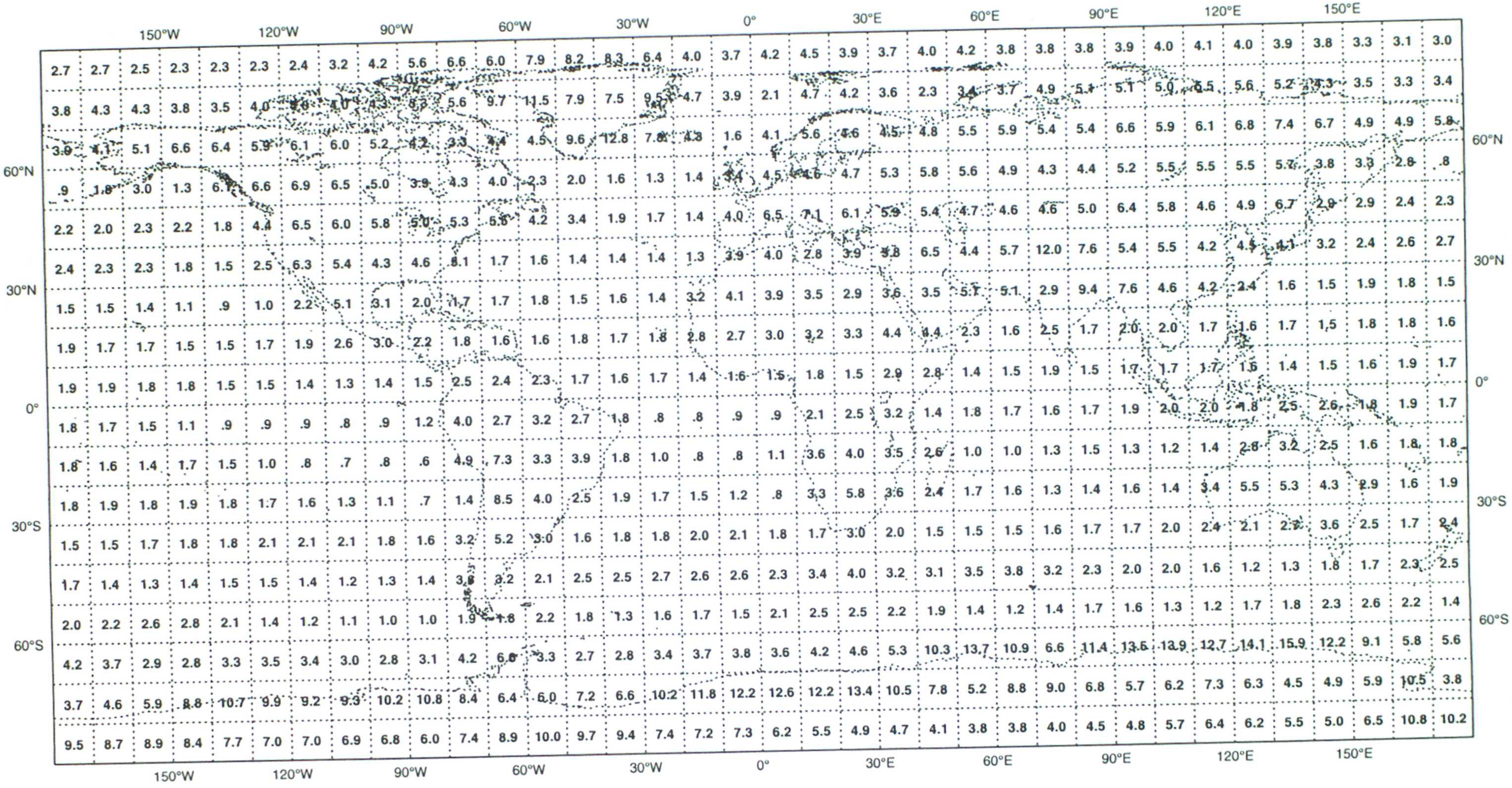
460	469	476	487	490	489	497	503	467	386	332	421	452	442	414	452	481	485	476	464	454	442	430	423	421	419	419	415	415	420	417	418	424	430	436	448
1221	1274	1307	1350	1368	1364	1352	1370	1316	1111	1209	1312	1204	885	961	1336	1376	1340	1296	1224	1193	1164	1144	1132	1155	1182	1179	1145	1113	1156	1125	1120	1108	1125	1156	1189
955	1046	1084	1103	1138	1166	1172	1154	1125	1119	1111	1119	1179	1078	1178	1198	1189	1123	1077	1027	968	942	956	1009	1076	1128	1156	1161	1145	1123	1038	955	893	936	891	860
889	926	960	1035	1092	1121	1122	1094	1080	1067	1074	1084	1096	1124	1136	1093	1068	1037	962	941	910	878	918	1002	1064	1098	1102	1115	1124	1115	1104	1018	912	890	879	850
860	861	875	990	1047	1092	1091	1056	1066	1060	1062	1077	1033	1035	1079	1053	1040	1014	898	919	900	887	983	1024	1050	1102	1064	1069	1102	1077	1099	1030	869	826	852	832
866	974	968	1024	1068	1017	1033	1048	1008	1036	1038	1046	1046	1046	1077	1064	1071	980	844	939	865	862	1013	1007	1020	1102	1029	1044	1024	1005	1089	1020	877	716	767	794
785	1008	1048	1053	1136	1031	998	1026	861	909	975	886	1057	1003	1017	1040	1069	930	835	942	832	915	1044	1008	1021	1034	738	735	957	1027	965	726	668	605	731	782
643	814	932	934	1017	908	870	812	692	708	735	835	944	754	897	931	1033	871	852	884	737	814	1016	937	889	625	508	676	738	736	500	486	519	561	730	777
568	743	906	951	1086	1054	959	976	826	771	749	801	965	852	846	852	1009	799	696	591	428	908	1045	1040	890	669	673	442	453	589	557	516	528	593	576	678
783	855	983	1029	1030	978	908	969	885	959	837	835	1062	1031	962	1025	1014	812	930	587	502	1000	1022	968	978	743	709	572	611	821	628	637	679	534	569	767
783	777	978	1042	1015	973	910	951	969	986	994	1000	1066	1035	864	1008	950	819	950	779	890	1061	1037	1037	993	857	953	934	909	1020	999	1080	1062	928	736	834
879	780	963	1063	1020	1009	1000	1008	1069	1005	966	1076	1044	1047	962	978	891	863	890	789	961	1073	1042	1056	1019	977	1008	931	881	970	974	1038	1102	1044	850	834
921	824	933	1074	1041	1057	1062	1014	1083	1023	1019	1095	1002	1004	959	936	857	904	880	806	978	1068	1064	1094	1029	995	1036	1014	1007	1025	1054	1162	1099	1084	926	851
906	858	894	1027	1037	1016	1041	1044	1091	1070	1066	1108	1054	1075	1028	881	854	906	844	878	1015	1075	1083	1067	1027	1032	1025	1049	1048	1037	1103	1147	1132	1113	1007	896
905	895	905	961	985	1041	1064	1073	1083	1094	1105	1111	1090	1070	992	896	880	906	911	969	1050	1081	1111	1107	1073	1062	1056	1066	1066	1062	1097	1120	1121	1093	1031	950
1000	932	912	964	993	1034	1065	1105	1143	1167	1178	1116	1138	1091	1023	966	970	994	1059	1118	1155	1187	1206	1176	1161	1118	1127	1114	1120	1109	1103	1111	1148	1161	1132	1078
1227	1150	1082	1034	1004	999	1014	1031	1024	988	916	938	1092	1067	1061	1068	1023	896	745	614	641	705	590	752	1133	1118	786	345	605	713	767	1020	1097	1136	1212	1284
408	393	379	382	400	394	374	304	230	336	373	366	323	311	357	352	324	270	209	185	220	224	172	135	107	104	120	160	257	333	360	365	398	419	450	433

Figure 26. ATOVS MEAN O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS8 (Surface)
NOAA15, using all observations



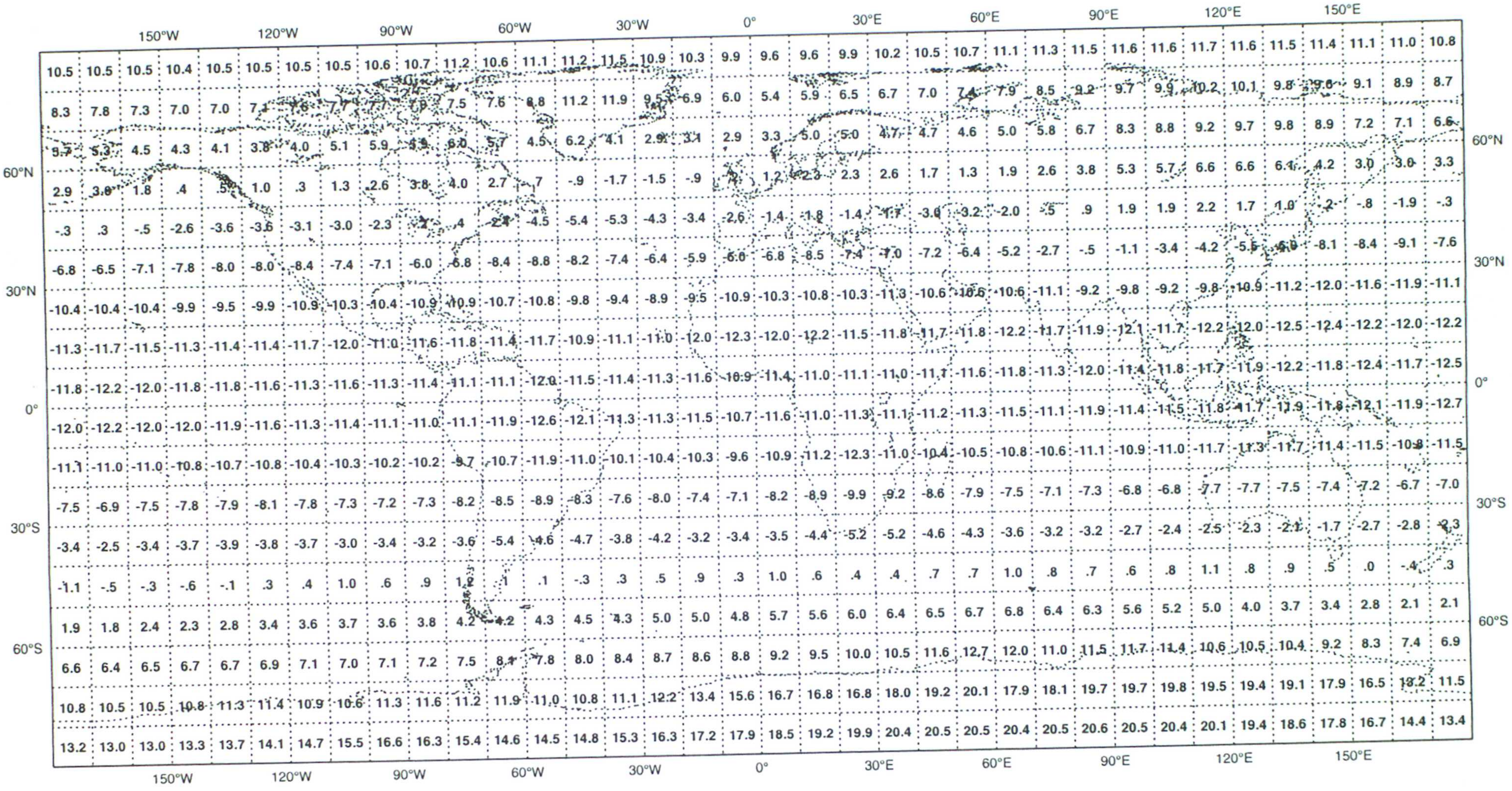
5.7	6.1	6.3	6.5	6.8	6.9	7.4	9.0	9.6	10.7	13.2	11.1	14.0	14.5	15.5	11.6	8.7	7.2	5.6	4.7	5.6	5.9	5.9	5.6	6.7	7.1	7.2	7.3	7.1	7.2	7.4	7.5	7.3	6.5	6.3	6.2
2.3	2.0	2.7	3.2	3.5	3.8	5.6	5.4	4.7	6.5	2.5	4.0	10.5	21.5	24.1	15.8	-1.3	-2.3	-5.8	-4.5	-3.0	-3.2	-3.2	-1.6	-.2	2.0	4.9	6.3	7.1	6.9	5.8	4.3	3.4	2.8	2.6	2.7
-3.5	-8.0	.4	1.9	.9	.0	-.2	1.9	2.5	.0	-.2	-.2	-3.7	8.0	-.1	-5.4	-7.3	-9.5	-9.0	-3.5	-3.0	-4.1	-4.9	-3.8	-1.8	-.4	1.4	5.6	5.9	6.8	8.2	10.6	8.8	3.6	3.0	1.5
-9.1	-9.8	-9.3	-11.3	-8.5	-3.9	-5.7	-4.9	-3.1	-4.2	-2.7	-3.0	-7.8	-10.6	-11.8	-13.1	-13.9	-11.8	-11.0	-8.0	-6.6	-5.7	-6.4	-6.1	-5.1	-3.8	-2.1	1.1	.6	3.5	2.8	1.8	-7.7	-7.3	-8.4	-9.4
-12.5	-12.5	-13.4	-14.9	-15.5	-13.3	-8.5	-9.8	-9.7	-8.6	-7.2	-12.8	-16.1	-17.4	-18.1	-17.7	-17.7	-14.4	-11.5	-10.9	-9.7	-13.8	-11.7	-13.2	-10.6	-5.8	-3.7	-.3	-1.2	-3.3	-5.6	-9.7	-12.8	-11.8	-12.4	-12.5
-20.4	-20.2	-20.6	-21.1	-20.7	-18.7	-17.7	-14.6	-17.1	-15.3	-20.5	-23.2	-23.1	-22.4	-22.0	-21.7	-21.2	-17.5	-20.8	-23.1	-21.9	-19.5	-18.1	-15.7	-13.2	-5.5	1.7	2.2	-6.0	-12.3	-18.8	-19.7	-21.0	-21.5	-22.0	-21.5
-25.2	-24.6	-24.0	-23.8	-23.1	-22.6	-23.8	-19.7	-23.4	-25.0	-26.0	-24.2	-24.4	-24.1	-24.0	-23.6	-23.7	-26.0	-24.6	-24.5	-26.4	-26.6	-24.3	-26.2	-25.2	-24.5	-17.0	-16.1	-15.5	-19.1	-24.1	-24.5	-24.4	-25.0	-25.6	-25.6
-24.7	-24.5	-24.4	-24.5	-24.4	-24.1	-23.9	-23.6	-21.6	-23.3	-24.1	-24.8	-24.9	-24.4	-24.6	-24.6	-26.4	-27.8	-25.9	-26.4	-24.4	-23.6	-24.5	-26.5	-26.9	-23.8	-23.5	-23.6	-22.4	-24.5	-24.0	-24.3	-24.5	-24.7	-24.8	-25.1
-24.3	-24.5	-24.4	-24.5	-24.0	-23.5	-23.1	-23.1	-22.7	-22.1	-20.5	-23.1	-25.0	-24.3	-23.6	-23.0	-23.1	-22.6	-22.3	-21.6	-21.5	-20.1	-22.6	-25.5	-25.6	-24.3	-23.7	-22.5	-23.2	-22.7	-23.6	-24.0	-23.6	-24.1	-24.2	-24.4
-25.3	-25.4	-25.8	-26.0	-25.6	-25.0	-24.1	-23.2	-22.1	-20.5	-21.3	-25.5	-27.4	-26.3	-24.9	-24.6	-23.9	-22.8	-22.3	-22.1	-22.2	-21.9	-23.9	-23.8	-23.6	-23.4	-23.6	-23.2	-23.6	-23.8	-24.7	-24.4	-22.9	-23.8	-24.6	-25.2
-24.2	-24.3	-24.2	-24.2	-24.5	-24.6	-23.9	-22.9	-21.7	-19.7	-16.6	-21.6	-26.6	-23.5	-24.0	-23.9	-22.8	-21.4	-20.4	-22.8	-25.7	-24.6	-24.8	-23.9	-23.2	-22.8	-23.2	-23.5	-23.9	-25.3	-25.5	-25.1	-24.9	-24.6	-23.9	-24.2
-21.1	-20.9	-21.3	-21.4	-21.2	-21.3	-21.3	-20.6	-19.7	-18.9	-17.5	-16.7	-21.1	-20.2	-21.3	-21.2	-20.5	-19.6	-18.6	-19.1	-21.5	-22.2	-22.2	-21.5	-20.9	-20.6	-20.2	-20.2	-20.6	-19.9	-20.8	-19.1	-19.7	-21.4	-21.4	-21.1
-16.2	-15.8	-16.1	-16.1	-15.8	-15.3	-15.2	-15.0	-15.0	-15.3	-13.5	-16.0	-16.3	-17.7	-16.4	-15.9	-15.6	-15.2	-15.4	-17.0	-17.4	-18.3	-17.6	-16.9	-16.2	-15.5	-14.9	-14.6	-14.9	-14.8	-14.4	-14.2	-12.2	-17.0	-16.6	-15.9
-11.9	-11.6	-11.2	-10.9	-10.4	-9.8	-9.6	-9.6	-9.7	-10.1	-8.2	-9.8	-11.1	-11.1	-9.1	-8.8	-8.3	-7.2	-7.4	-8.8	-9.0	-8.4	-7.6	-8.2	-8.9	-8.7	-9.6	-9.7	-9.6	-9.7	-10.2	-10.6	-11.1	-12.0	-11.7	-10.8
-6.7	-6.2	-5.5	-5.1	-5.2	-5.7	-5.8	-6.2	-6.3	-6.5	-6.4	-5.9	-4.8	-2.9	-1.8	-1.8	-1.5	-.7	-.5	-.1	.1	-.9	-1.2	-1.9	-2.0	-1.4	-2.2	-2.8	-2.6	-3.1	-4.3	-4.6	-4.2	-5.2	-6.7	-6.8
2.1	1.8	1.4	1.5	1.7	1.2	.6	.0	-.1	.0	.9	3.8	2.1	1.5	1.9	2.7	3.4	3.6	4.0	5.2	6.0	6.7	10.9	14.9	11.2	7.5	10.6	12.8	13.3	11.5	12.2	14.2	10.4	8.0	5.4	3.5
10.4	9.8	9.6	11.0	13.4	13.6	11.8	11.0	15.0	15.4	14.7	17.1	10.7	9.8	10.3	16.7	21.7	30.8	33.9	33.8	32.4	37.5	43.0	46.5	37.2	37.6	43.7	45.3	47.9	46.9	47.4	46.8	43.5	38.1	21.5	11.7
19.1	18.4	19.0	21.9	22.8	23.8	25.9	30.3	33.5	31.7	27.6	24.6	25.6	27.5	29.6	34.2	37.2	40.7	42.8	44.6	46.4	48.0	49.1	49.8	49.9	49.5	49.4	49.7	49.4	48.2	46.2	43.4	40.2	35.2	23.7	19.4

Figure 27. ATOVS SD O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS8 (Surface)
NOAA15, using all observations



2.7	2.7	2.5	2.3	2.3	2.3	2.4	3.2	4.2	5.6	6.6	6.0	7.9	8.2	8.3	6.4	4.0	3.7	4.2	4.5	3.9	3.7	4.0	4.2	3.8	3.8	3.8	3.9	4.0	4.1	4.0	3.9	3.8	3.3	3.1	3.0
3.8	4.3	4.3	3.8	3.5	4.0	4.6	4.0	4.3	6.3	5.6	9.7	11.5	7.9	7.5	9.5	4.7	3.9	2.1	4.7	4.2	3.6	2.3	3.4	3.7	4.9	5.1	5.1	5.0	6.5	5.6	5.2	4.3	3.5	3.3	3.4
3.9	4.1	5.1	6.6	6.4	5.9	6.1	6.0	5.2	4.2	3.3	4.4	4.5	9.6	12.8	7.8	4.8	1.6	4.1	5.6	4.6	4.5	4.8	5.5	5.9	5.4	5.4	6.6	5.9	6.1	6.8	7.4	6.7	4.9	4.9	5.8
.9	1.8	3.0	1.3	6.1	6.6	6.9	6.5	5.0	3.9	4.3	4.0	2.3	2.0	1.6	1.3	1.4	3.4	4.5	4.6	4.7	5.3	5.8	5.6	4.9	4.3	4.4	5.2	5.5	5.5	5.5	5.7	3.8	3.3	2.8	.8
2.2	2.0	2.3	2.2	1.8	4.4	6.5	6.0	5.8	5.0	5.3	5.8	4.2	3.4	1.9	1.7	1.4	4.0	6.5	7.1	6.1	5.9	5.4	4.7	4.6	4.6	5.0	6.4	5.8	4.6	4.9	6.7	2.9	2.9	2.4	2.3
2.4	2.3	2.3	1.8	1.5	2.5	6.3	5.4	4.3	4.6	8.1	1.7	1.6	1.4	1.4	1.4	1.3	3.9	4.0	2.8	3.9	3.8	6.5	4.4	5.7	12.0	7.6	5.4	5.5	4.2	4.5	4.1	3.2	2.4	2.6	2.7
1.5	1.5	1.4	1.1	.9	1.0	2.2	5.1	3.1	2.0	1.7	1.7	1.8	1.5	1.6	1.4	3.2	4.1	3.9	3.5	2.9	3.6	3.5	5.1	5.1	2.9	9.4	7.6	4.6	4.2	2.4	1.6	1.5	1.9	1.8	1.5
1.9	1.7	1.7	1.5	1.5	1.7	1.9	2.6	3.0	2.2	1.8	1.6	1.6	1.8	1.7	1.8	2.8	2.7	3.0	3.2	3.3	4.4	4.4	2.3	1.6	2.5	1.7	2.0	2.0	1.7	1.6	1.7	1.5	1.8	1.8	1.6
1.9	1.9	1.8	1.8	1.5	1.5	1.4	1.3	1.4	1.5	2.5	2.4	2.3	1.7	1.6	1.7	1.4	1.6	1.5	1.8	1.5	2.9	2.8	1.4	1.5	1.9	1.5	1.7	1.7	1.7	1.6	1.4	1.5	1.6	1.9	1.7
1.8	1.7	1.5	1.1	.9	.9	.9	.8	.9	1.2	4.0	2.7	3.2	2.7	1.8	.8	.8	.9	.9	2.1	2.5	3.2	1.4	1.8	1.7	1.6	1.7	1.9	2.0	2.0	1.8	2.5	2.6	1.8	1.9	1.7
1.8	1.6	1.4	1.7	1.5	1.0	.8	.7	.8	.6	4.9	7.3	3.3	3.9	1.8	1.0	.8	.8	1.1	3.6	4.0	3.5	2.6	1.0	1.0	1.3	1.5	1.3	1.2	1.4	2.8	3.2	2.5	1.6	1.8	1.8
1.8	1.9	1.8	1.9	1.8	1.7	1.6	1.3	1.1	.7	1.4	8.5	4.0	2.5	1.9	1.7	1.5	1.2	.8	3.3	5.8	3.6	2.4	1.7	1.6	1.3	1.4	1.6	1.4	3.4	5.5	5.3	4.3	2.9	1.6	1.9
1.5	1.5	1.7	1.8	1.8	2.1	2.1	2.1	1.8	1.6	3.2	5.2	3.0	1.6	1.8	1.8	2.0	2.1	1.8	1.7	3.0	2.0	1.5	1.5	1.5	1.6	1.7	1.7	2.0	2.4	2.1	2.7	3.6	2.5	1.7	2.4
1.7	1.4	1.3	1.4	1.5	1.5	1.4	1.2	1.3	1.4	3.6	3.2	2.1	2.5	2.5	2.7	2.6	2.6	2.3	3.4	4.0	3.2	3.1	3.5	3.8	3.2	2.3	2.0	2.0	1.6	1.2	1.3	1.8	1.7	2.3	2.5
2.0	2.2	2.6	2.8	2.1	1.4	1.2	1.1	1.0	1.0	1.9	1.8	2.2	1.8	1.3	1.6	1.7	1.5	2.1	2.5	2.5	2.2	1.9	1.4	1.2	1.4	1.7	1.6	1.3	1.2	1.7	1.8	2.3	2.6	2.2	1.4
4.2	3.7	2.9	2.8	3.3	3.5	3.4	3.0	2.8	3.1	4.2	6.6	3.3	2.7	2.8	3.4	3.7	3.8	3.6	4.2	4.6	5.3	10.3	13.7	10.9	6.6	11.4	13.6	13.9	12.7	14.1	15.9	12.2	9.1	5.8	5.6
3.7	4.6	5.9	8.8	10.7	9.9	9.2	9.3	10.2	10.8	8.4	6.4	6.0	7.2	6.6	10.2	11.8	12.2	12.6	12.2	13.4	10.5	7.8	5.2	8.8	9.0	6.8	5.7	6.2	7.3	6.3	4.5	4.9	5.9	10.5	3.8
9.5	8.7	8.9	8.4	7.7	7.0	7.0	6.9	6.8	6.0	7.4	8.9	10.0	9.7	9.4	7.4	7.2	7.3	6.2	5.5	4.9	4.7	4.1	3.8	3.8	4.0	4.5	4.8	5.7	6.4	6.2	5.5	5.0	6.5	10.8	10.2

Figure 28. ATOVS MEAN O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS15 (700 hPa)
NOAA15, using all observations

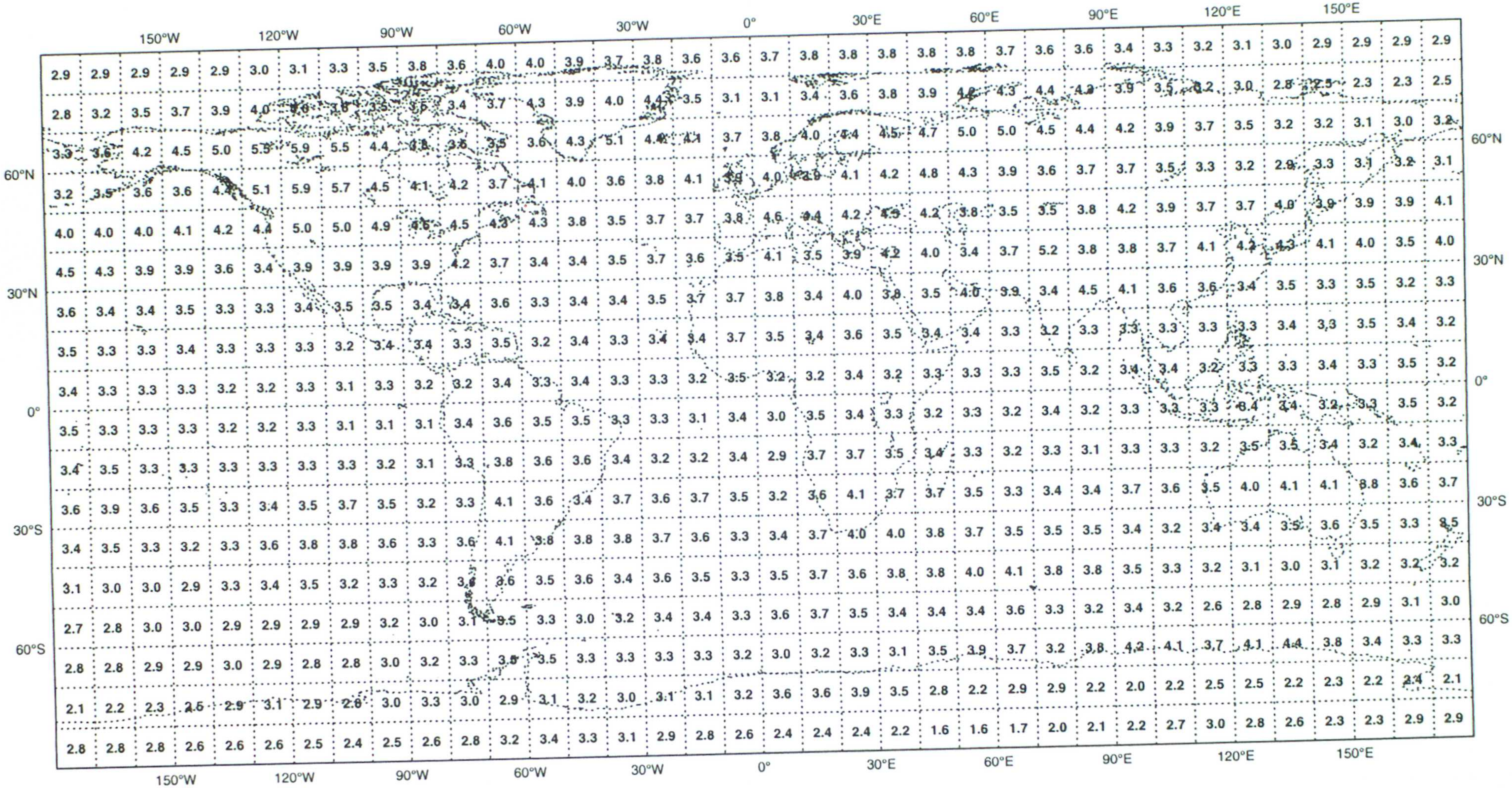


10.5	10.5	10.5	10.4	10.5	10.5	10.5	10.5	10.6	10.7	11.2	10.6	11.1	11.2	11.5	10.9	10.3	9.9	9.6	9.6	9.9	10.2	10.5	10.7	11.1	11.3	11.5	11.6	11.6	11.7	11.6	11.5	11.4	11.1	11.0	10.8
8.3	7.8	7.3	7.0	7.0	7.1	7.6	7.7	7.7	7.9	7.5	7.6	8.8	11.2	11.9	9.5	6.9	6.0	5.4	5.9	6.5	6.7	7.0	7.4	7.9	8.5	9.2	9.7	9.9	10.2	10.1	9.8	9.6	9.1	8.9	8.7
5.7	5.3	4.5	4.3	4.1	3.8	4.0	5.1	5.9	5.9	6.0	5.7	4.5	6.2	4.1	2.9	3.1	2.9	3.3	5.0	5.0	4.7	4.7	4.6	5.0	5.8	6.7	8.3	8.8	9.2	9.7	9.8	8.9	7.2	7.1	6.6
2.9	3.0	1.8	.4	.5	1.0	.3	1.3	2.6	3.8	4.0	2.7	.7	-.9	-1.7	-1.5	-.9	.2	1.2	2.3	2.3	2.6	1.7	1.3	1.9	2.6	3.8	5.3	5.7	6.6	6.6	6.1	4.2	3.0	3.0	3.3
-.3	.3	-.5	-2.6	-3.6	-3.6	-3.1	-3.0	-2.3	-.2	.4	-2.4	-4.5	-5.4	-5.3	-4.3	-3.4	-2.6	-1.4	-1.8	-1.4	-1.7	-3.0	-3.2	-2.0	.5	.9	1.9	1.9	2.2	1.7	1.0	-.2	-.8	-1.9	-.3
-6.8	-6.5	-7.1	-7.8	-8.0	-8.0	-8.4	-7.4	-7.1	-6.0	-6.8	-8.4	-8.8	-8.2	-7.4	-6.4	-5.9	-6.0	-6.8	-8.5	-7.4	-7.0	-7.2	-6.4	-5.2	-2.7	-.5	-1.1	-3.4	-4.2	-5.5	-6.0	-8.1	-8.4	-9.1	-7.6
-10.4	-10.4	-10.4	-9.9	-9.5	-9.9	-10.9	-10.3	-10.4	-10.9	-10.9	-10.7	-10.8	-9.8	-9.4	-8.9	-9.5	-10.9	-10.3	-10.8	-10.3	-11.3	-10.6	-10.6	-10.6	-11.1	-9.2	-9.8	-9.2	-9.8	-10.9	-11.2	-12.0	-11.6	-11.9	-11.1
-11.3	-11.7	-11.5	-11.3	-11.4	-11.4	-11.7	-12.0	-11.0	-11.6	-11.8	-11.4	-11.7	-10.9	-11.1	-11.0	-12.0	-12.3	-12.0	-12.2	-11.5	-11.8	-11.7	-11.8	-12.2	-11.7	-11.9	-12.1	-11.7	-12.2	-12.0	-12.5	-12.4	-12.2	-12.0	-12.2
-11.8	-12.2	-12.0	-11.8	-11.8	-11.6	-11.3	-11.6	-11.3	-11.4	-11.1	-11.1	-12.0	-11.5	-11.4	-11.3	-11.6	-10.9	-11.4	-11.0	-11.1	-11.0	-11.1	-11.6	-11.8	-11.3	-12.0	-11.4	-11.8	-11.7	-11.9	-12.2	-11.8	-12.4	-11.7	-12.5
-12.0	-12.2	-12.0	-12.0	-11.9	-11.6	-11.3	-11.4	-11.1	-11.0	-11.1	-11.9	-12.6	-12.1	-11.3	-11.3	-11.5	-10.7	-11.6	-11.0	-11.3	-11.1	-11.2	-11.3	-11.5	-11.1	-11.9	-11.4	-11.5	-11.8	-11.7	-11.9	-11.8	-12.1	-11.9	-12.7
-11.1	-11.0	-11.0	-10.8	-10.7	-10.8	-10.4	-10.3	-10.2	-10.2	-9.7	-10.7	-11.9	-11.0	-10.1	-10.4	-10.3	-9.6	-10.9	-11.2	-12.3	-11.0	-10.4	-10.5	-10.8	-10.6	-11.1	-10.9	-11.0	-11.7	-11.3	-11.7	-11.4	-11.5	-10.8	-11.5
-7.5	-6.9	-7.5	-7.8	-7.9	-8.1	-7.8	-7.3	-7.2	-7.3	-8.2	-8.5	-8.9	-8.3	-7.6	-8.0	-7.4	-7.1	-8.2	-8.9	-9.9	-9.2	-8.6	-7.9	-7.5	-7.1	-7.3	-6.8	-6.8	-7.7	-7.7	-7.5	-7.4	-7.2	-6.7	-7.0
-3.4	-2.5	-3.4	-3.7	-3.9	-3.8	-3.7	-3.0	-3.4	-3.2	-3.6	-5.4	-4.6	-4.7	-3.8	-4.2	-3.2	-3.4	-3.5	-4.4	-5.2	-5.2	-4.6	-4.3	-3.6	-3.2	-3.2	-2.7	-2.4	-2.5	-2.3	-2.1	-1.7	-2.7	-2.8	-2.3
-1.1	-.5	-.3	-.6	-.1	.3	.4	1.0	.6	.9	1.2	.1	.1	-.3	.3	.5	.9	.3	1.0	.6	.4	.4	.7	.7	1.0	.8	.7	.6	.8	1.1	.8	.9	.5	.0	-.4	.3
1.9	1.8	2.4	2.3	2.8	3.4	3.6	3.7	3.6	3.8	4.2	4.2	4.3	4.5	4.3	5.0	5.0	4.8	5.7	5.6	6.0	6.4	6.5	6.7	6.8	6.4	6.3	5.6	5.2	5.0	4.0	3.7	3.4	2.8	2.1	2.1
6.6	6.4	6.5	6.7	6.7	6.9	7.1	7.0	7.1	7.2	7.5	8.4	7.8	8.0	8.4	8.7	8.6	8.8	9.2	9.5	10.0	10.5	11.6	12.7	12.0	11.0	11.5	11.7	11.4	10.6	10.5	10.4	9.2	8.3	7.4	6.9
10.8	10.5	10.5	10.8	11.3	11.4	10.9	10.6	11.3	11.6	11.2	11.9	11.0	10.8	11.1	12.2	13.4	15.6	16.7	16.8	16.8	18.0	19.2	20.1	17.9	18.1	19.7	19.7	19.8	19.5	19.4	19.1	17.9	16.5	13.2	11.5
13.2	13.0	13.0	13.3	13.7	14.1	14.7	15.5	16.6	16.3	15.4	14.6	14.5	14.8	15.3	16.3	17.2	17.9	18.5	19.2	19.9	20.4	20.5	20.5	20.4	20.5	20.6	20.5	20.4	20.1	19.4	18.6	17.8	16.7	14.4	13.4

Figure 29. ATOVS SD O-B brightness temperature differences (deg C). OCTOBER 2003

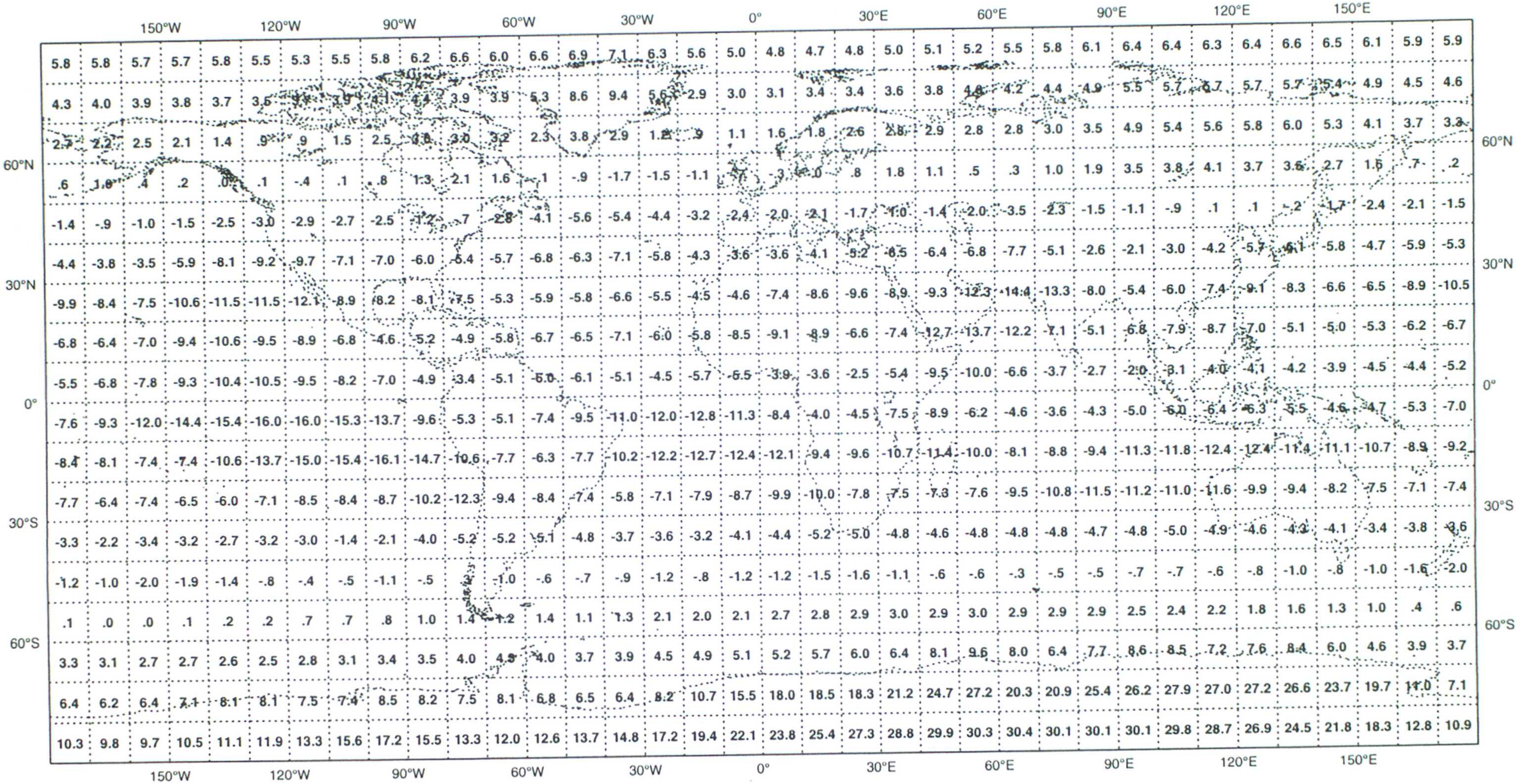
Channel: HIRS15 (700 hPa)

NOAA15, using all observations



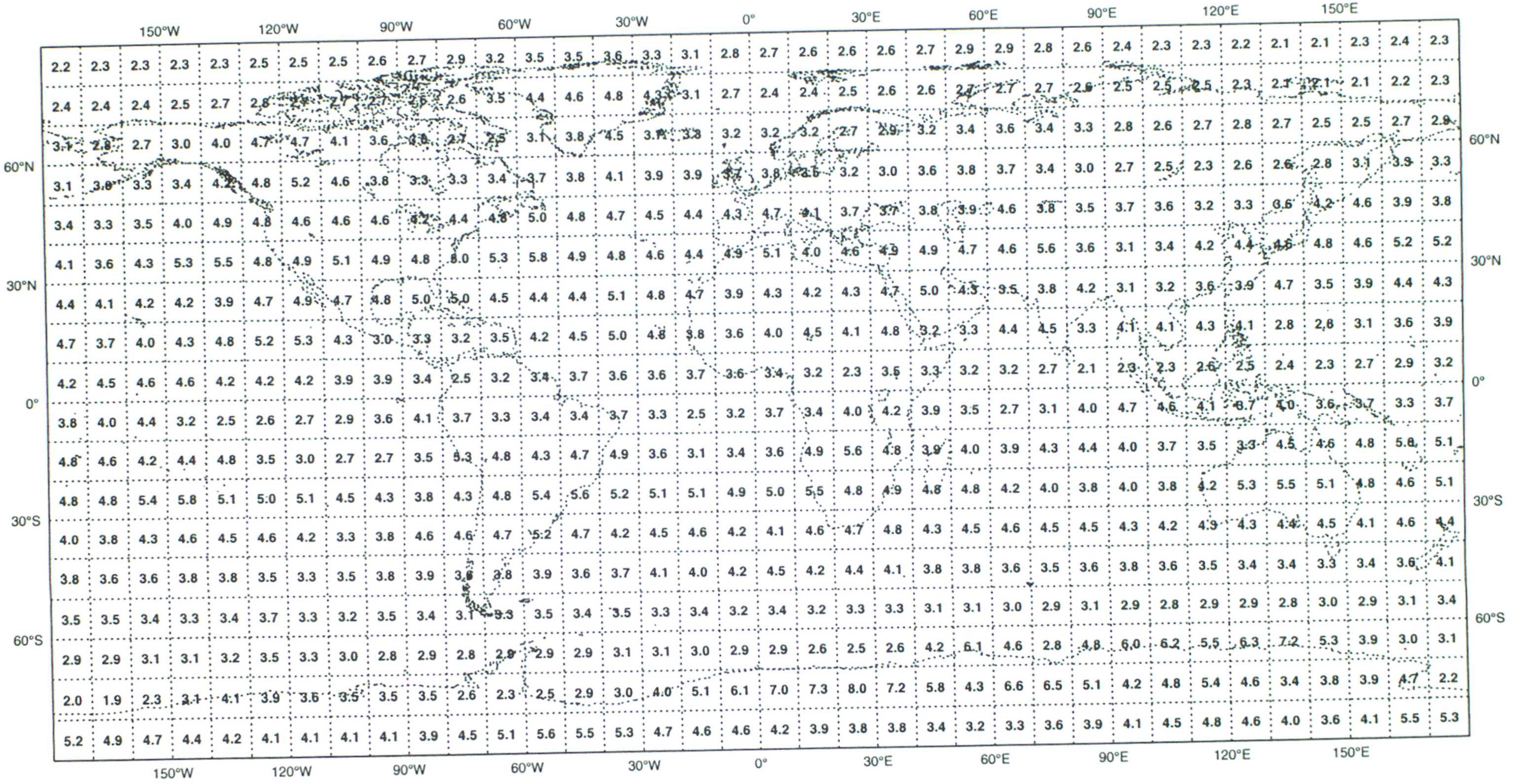
2.9	2.9	2.9	2.9	2.9	3.0	3.1	3.3	3.5	3.8	3.6	4.0	4.0	3.9	3.7	3.8	3.6	3.6	3.7	3.8	3.8	3.8	3.8	3.8	3.7	3.6	3.6	3.4	3.3	3.2	3.1	3.0	2.9	2.9	2.9	2.9
2.8	3.2	3.5	3.7	3.9	4.0	3.6	3.8	3.5	3.5	3.4	3.7	4.3	3.9	4.0	4.4	3.5	3.1	3.1	3.4	3.6	3.8	3.9	4.2	4.3	4.4	4.2	3.9	3.5	3.2	3.0	2.8	2.5	2.3	2.3	2.5
3.3	3.6	4.2	4.5	5.0	5.5	5.9	5.5	4.4	3.8	3.6	3.5	3.6	4.3	5.1	4.4	4.1	3.7	3.8	4.0	4.4	4.5	4.7	5.0	5.0	4.5	4.4	4.2	3.9	3.7	3.5	3.2	3.2	3.1	3.0	3.2
3.2	3.5	3.6	3.6	4.4	5.1	5.9	5.7	4.5	4.1	4.2	3.7	4.1	4.0	3.6	3.8	4.1	3.9	4.0	3.9	4.1	4.2	4.8	4.3	3.9	3.6	3.7	3.7	3.5	3.3	3.2	2.9	3.3	3.1	3.2	3.1
4.0	4.0	4.0	4.1	4.2	4.4	5.0	5.0	4.9	4.6	4.5	4.3	4.3	3.8	3.5	3.7	3.7	3.8	4.6	4.4	4.2	4.5	4.2	3.8	3.5	3.5	3.8	4.2	3.9	3.7	3.7	4.0	3.9	3.9	3.9	4.1
4.5	4.3	3.9	3.9	3.6	3.4	3.9	3.9	3.9	3.9	4.2	3.7	3.4	3.4	3.5	3.7	3.6	3.5	4.1	3.5	3.9	4.2	4.0	3.4	3.7	5.2	3.8	3.8	3.7	4.1	4.2	4.3	4.1	4.0	3.5	4.0
3.6	3.4	3.4	3.5	3.3	3.3	3.4	3.5	3.5	3.4	3.4	3.6	3.3	3.4	3.4	3.5	3.7	3.7	3.8	3.4	4.0	3.8	3.5	4.0	3.9	3.4	4.5	4.1	3.6	3.6	3.4	3.5	3.3	3.5	3.2	3.3
3.5	3.3	3.3	3.4	3.3	3.3	3.3	3.2	3.4	3.4	3.3	3.5	3.2	3.4	3.3	3.4	3.4	3.7	3.5	3.4	3.6	3.5	3.4	3.4	3.3	3.2	3.3	3.3	3.3	3.3	3.3	3.4	3.3	3.5	3.4	3.2
3.4	3.3	3.3	3.3	3.2	3.2	3.3	3.1	3.3	3.2	3.2	3.4	3.3	3.4	3.3	3.3	3.2	3.5	3.2	3.2	3.4	3.2	3.3	3.3	3.3	3.5	3.2	3.4	3.4	3.2	3.3	3.3	3.4	3.3	3.5	3.2
3.5	3.3	3.3	3.3	3.2	3.2	3.3	3.1	3.1	3.1	3.4	3.6	3.5	3.5	3.3	3.3	3.1	3.4	3.0	3.5	3.4	3.3	3.2	3.3	3.2	3.4	3.2	3.3	3.3	3.3	3.4	3.4	3.2	3.3	3.5	3.2
3.4	3.5	3.3	3.3	3.3	3.3	3.3	3.3	3.2	3.1	3.3	3.8	3.6	3.6	3.4	3.2	3.2	3.4	2.9	3.7	3.7	3.5	3.4	3.3	3.2	3.3	3.1	3.3	3.3	3.2	3.5	3.5	3.4	3.2	3.4	3.3
3.6	3.9	3.6	3.5	3.3	3.4	3.5	3.7	3.5	3.2	3.3	4.1	3.6	3.4	3.7	3.6	3.7	3.5	3.2	3.6	4.1	3.7	3.7	3.5	3.3	3.4	3.4	3.7	3.6	3.5	4.0	4.1	4.1	3.8	3.6	3.7
3.4	3.5	3.3	3.2	3.3	3.6	3.8	3.8	3.6	3.3	3.6	4.1	3.8	3.8	3.8	3.7	3.6	3.3	3.4	3.7	4.0	4.0	3.8	3.7	3.5	3.5	3.5	3.4	3.2	3.4	3.4	3.5	3.6	3.5	3.3	3.5
3.1	3.0	3.0	2.9	3.3	3.4	3.5	3.2	3.3	3.2	3.6	3.6	3.5	3.6	3.4	3.6	3.5	3.3	3.5	3.7	3.6	3.8	3.8	4.0	4.1	3.8	3.8	3.5	3.3	3.2	3.1	3.0	3.1	3.2	3.2	3.2
2.7	2.8	3.0	3.0	2.9	2.9	2.9	2.9	3.2	3.0	3.1	3.5	3.3	3.0	3.2	3.4	3.4	3.3	3.6	3.7	3.5	3.4	3.4	3.4	3.6	3.3	3.2	3.4	3.2	2.6	2.8	2.9	2.8	2.9	3.1	3.0
2.8	2.8	2.9	2.9	3.0	2.9	2.8	2.8	3.0	3.2	3.3	3.5	3.5	3.3	3.3	3.3	3.3	3.2	3.0	3.2	3.3	3.1	3.5	3.9	3.7	3.2	3.8	4.2	4.1	3.7	4.1	4.4	3.8	3.4	3.3	3.3
2.1	2.2	2.3	2.5	2.9	3.1	2.9	2.8	3.0	3.3	3.0	2.9	3.1	3.2	3.0	3.1	3.1	3.2	3.6	3.6	3.9	3.5	2.8	2.2	2.9	2.9	2.2	2.0	2.2	2.5	2.5	2.2	2.3	2.2	2.4	2.1
2.8	2.8	2.8	2.6	2.6	2.6	2.5	2.4	2.5	2.6	2.8	3.2	3.4	3.3	3.1	2.9	2.8	2.6	2.4	2.4	2.4	2.2	1.6	1.6	1.7	2.0	2.1	2.2	2.7	3.0	2.8	2.6	2.3	2.3	2.9	2.9

Figure 30. ATOVS MEAN O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS11 (500 - 700 hPa)
NOAA15, using all observations



5.8	5.8	5.7	5.7	5.8	5.5	5.3	5.5	5.8	6.2	6.6	6.0	6.6	6.9	7.1	6.3	5.6	5.0	4.8	4.7	4.8	5.0	5.1	5.2	5.5	5.8	6.1	6.4	6.4	6.3	6.4	6.6	6.5	6.1	5.9	5.9
4.3	4.0	3.9	3.8	3.7	3.5	3.7	3.9	4.1	4.4	3.9	3.9	5.3	8.6	9.4	5.6	2.9	3.0	3.1	3.4	3.4	3.6	3.8	4.8	4.2	4.4	4.9	5.5	5.7	6.7	5.7	5.7	5.4	4.9	4.5	4.6
2.7	2.2	2.5	2.1	1.4	.9	.9	1.5	2.5	3.0	3.0	3.2	2.3	3.8	2.9	1.2	.9	1.1	1.6	1.8	2.6	2.8	2.9	2.8	2.8	3.0	3.5	4.9	5.4	5.6	5.8	6.0	5.3	4.1	3.7	3.3
.6	1.0	.4	.2	.0	.1	-.4	.1	.8	1.3	2.1	1.6	-.1	-.9	-1.7	-1.5	-1.1	.7	-.3	.0	.8	1.8	1.1	.5	.3	1.0	1.9	3.5	3.8	4.1	3.7	3.6	2.7	1.6	.7	.2
-1.4	-.9	-1.0	-1.5	-2.5	-3.0	-2.9	-2.7	-2.5	-1.2	-.7	-2.8	-4.1	-5.6	-5.4	-4.4	-3.2	-2.4	-2.0	-2.1	-1.7	-1.0	-1.4	-2.0	-3.5	-2.3	-1.5	-1.1	-.9	.1	.1	-.2	-1.7	-2.4	-2.1	-1.5
-4.4	-3.8	-3.5	-5.9	-8.1	-9.2	-9.7	-7.1	-7.0	-6.0	-5.4	-5.7	-6.8	-6.3	-7.1	-5.8	-4.3	-3.6	-3.6	-4.1	-5.2	-6.5	-6.4	-6.8	-7.7	-5.1	-2.6	-2.1	-3.0	-4.2	-5.7	-6.1	-5.8	-4.7	-5.9	-5.3
-9.9	-8.4	-7.5	-10.6	-11.5	-11.5	-12.1	-8.9	-8.2	-8.1	-7.5	-5.3	-5.9	-5.8	-6.6	-5.5	-4.5	-4.6	-7.4	-8.6	-9.6	-8.9	-9.3	-12.3	-14.4	-13.3	-8.0	-5.4	-6.0	-7.4	-9.1	-8.3	-6.6	-6.5	-8.9	-10.5
-6.8	-6.4	-7.0	-9.4	-10.6	-9.5	-8.9	-6.8	-4.6	-5.2	-4.9	-5.8	-6.7	-6.5	-7.1	-6.0	-5.8	-8.5	-9.1	-8.9	-6.6	-7.4	-12.7	-13.7	-12.2	-7.1	-5.1	-6.8	-7.9	-8.7	-7.0	-5.1	-5.0	-5.3	-6.2	-6.7
-5.5	-6.8	-7.8	-9.3	-10.4	-10.5	-9.5	-8.2	-7.0	-4.9	-3.4	-5.1	-6.0	-6.1	-5.1	-4.5	-5.7	-6.5	-3.9	-3.6	-2.5	-5.4	-9.5	-10.0	-6.6	-3.7	-2.7	-2.0	-3.1	-4.0	-4.1	-4.2	-3.9	-4.5	-4.4	-5.2
-7.6	-9.3	-12.0	-14.4	-15.4	-16.0	-16.0	-15.3	-13.7	-9.6	-5.3	-5.1	-7.4	-9.5	-11.0	-12.0	-12.8	-11.3	-8.4	-4.0	-4.5	-7.5	-8.9	-6.2	-4.6	-3.6	-4.3	-5.0	-6.0	-6.4	-6.3	-5.5	-4.6	-4.7	-5.3	-7.0
-8.4	-8.1	-7.4	-7.4	-10.6	-13.7	-15.0	-15.4	-16.1	-14.7	-10.6	-7.7	-6.3	-7.7	-10.2	-12.2	-12.7	-12.4	-12.1	-9.4	-9.6	-10.7	-11.4	-10.0	-8.1	-8.8	-9.4	-11.3	-11.8	-12.4	-12.4	-11.4	-11.1	-10.7	-8.9	-9.2
-7.7	-6.4	-7.4	-6.5	-6.0	-7.1	-8.5	-8.4	-8.7	-10.2	-12.3	-9.4	-8.4	-7.4	-5.8	-7.1	-7.9	-8.7	-9.9	-10.0	-7.8	-7.5	-7.3	-7.6	-9.5	-10.8	-11.5	-11.2	-11.0	-11.6	-9.9	-9.4	-8.2	-7.5	-7.1	-7.4
-3.3	-2.2	-3.4	-3.2	-2.7	-3.2	-3.0	-1.4	-2.1	-4.0	-5.2	-5.2	-5.1	-4.8	-3.7	-3.6	-3.2	-4.1	-4.4	-5.2	-5.0	-4.8	-4.6	-4.8	-4.8	-4.8	-4.7	-4.8	-5.0	-4.9	-4.6	-4.3	-4.1	-3.4	-3.8	-3.6
-1.2	-1.0	-2.0	-1.9	-1.4	-.8	-.4	-.5	-1.1	-.5	.3	-1.0	-.6	-.7	-.9	-1.2	-.8	-1.2	-1.2	-1.5	-1.6	-1.1	-.6	-.6	-.3	-.5	-.5	-.7	-.7	-.6	-.8	-1.0	-.8	-1.0	-1.6	-2.0
.1	.0	.0	.1	.2	.2	.7	.7	.8	1.0	1.4	1.2	1.4	1.1	1.3	2.1	2.0	2.1	2.7	2.8	2.9	3.0	2.9	3.0	2.9	2.9	2.9	2.5	2.4	2.2	1.8	1.6	1.3	1.0	.4	.6
3.3	3.1	2.7	2.7	2.6	2.5	2.8	3.1	3.4	3.5	4.0	4.5	4.0	3.7	3.9	4.5	4.9	5.1	5.2	5.7	6.0	6.4	8.1	9.6	8.0	6.4	7.7	8.6	8.5	7.2	7.6	8.4	6.0	4.6	3.9	3.7
6.4	6.2	6.4	7.1	8.1	8.1	7.5	7.4	8.5	8.2	7.5	8.1	6.8	6.5	6.4	8.2	10.7	15.5	18.0	18.5	18.3	21.2	24.7	27.2	20.3	20.9	25.4	26.2	27.9	27.0	27.2	26.6	23.7	19.7	11.0	7.1
10.3	9.8	9.7	10.5	11.1	11.9	13.3	15.6	17.2	15.5	13.3	12.0	12.6	13.7	14.8	17.2	19.4	22.1	23.8	25.4	27.3	28.8	29.9	30.3	30.4	30.1	30.1	30.1	29.8	28.7	26.9	24.5	21.8	18.3	12.8	10.9

Figure 31. ATOVS SD O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS11 (500 - 700 hPa)
NOAA15, using all observations



2.2	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.6	2.7	2.9	3.2	3.5	3.5	3.6	3.3	3.1	2.8	2.7	2.6	2.6	2.6	2.7	2.9	2.9	2.8	2.6	2.4	2.3	2.3	2.2	2.1	2.1	2.3	2.4	2.3
2.4	2.4	2.4	2.5	2.7	2.8	2.4	2.7	2.7	2.5	2.6	3.5	4.4	4.6	4.8	4.3	3.1	2.7	2.4	2.4	2.5	2.6	2.6	2.7	2.7	2.7	2.6	2.5	2.5	2.5	2.3	2.1	2.1	2.1	2.2	2.3
3.1	2.8	2.7	3.0	4.0	4.7	4.7	4.1	3.6	3.8	2.7	2.5	3.1	3.8	4.5	3.1	3.8	3.2	3.2	3.2	2.7	2.9	3.2	3.4	3.6	3.4	3.3	2.8	2.6	2.7	2.8	2.7	2.5	2.5	2.7	2.9
3.1	3.8	3.3	3.4	4.2	4.8	5.2	4.6	3.8	3.3	3.3	3.4	3.7	3.8	4.1	3.9	3.9	3.7	3.8	2.5	3.2	3.0	3.6	3.8	3.7	3.4	3.0	2.7	2.5	2.3	2.6	2.6	2.8	3.1	3.9	3.3
3.4	3.3	3.5	4.0	4.9	4.8	4.6	4.6	4.6	4.2	4.4	4.8	5.0	4.8	4.7	4.5	4.4	4.3	4.7	4.1	3.7	3.7	3.8	3.9	4.6	3.8	3.5	3.7	3.6	3.2	3.3	3.6	4.2	4.6	3.9	3.8
4.1	3.6	4.3	5.3	5.5	4.8	4.9	5.1	4.9	4.8	8.0	5.3	5.8	4.9	4.8	4.6	4.4	4.9	5.1	4.0	4.6	4.9	4.9	4.7	4.6	5.6	3.6	3.1	3.4	4.2	4.4	4.6	4.8	4.6	5.2	5.2
4.4	4.1	4.2	4.2	3.9	4.7	4.9	4.7	4.8	5.0	5.0	4.5	4.4	4.4	5.1	4.8	4.7	3.9	4.3	4.2	4.3	4.7	5.0	4.3	9.5	3.8	4.2	3.1	3.2	3.6	3.9	4.7	3.5	3.9	4.4	4.3
4.7	3.7	4.0	4.3	4.8	5.2	5.3	4.3	3.0	3.3	3.2	3.5	4.2	4.5	5.0	4.8	3.8	3.6	4.0	4.5	4.1	4.8	3.2	3.3	4.4	4.5	3.3	4.1	4.1	4.3	4.1	2.8	2.8	3.1	3.6	3.9
4.2	4.5	4.6	4.6	4.2	4.2	4.2	3.9	3.9	3.4	2.5	3.2	3.4	3.7	3.6	3.6	3.7	3.6	3.4	3.2	2.3	3.5	3.3	3.2	3.2	2.7	2.1	2.3	2.3	2.6	2.5	2.4	2.3	2.7	2.9	3.2
3.8	4.0	4.4	3.2	2.5	2.6	2.7	2.9	3.6	4.1	3.7	3.3	3.4	3.4	3.7	3.3	2.5	3.2	3.7	3.4	4.0	4.2	3.9	3.5	2.7	3.1	4.0	4.7	4.6	4.1	6.7	4.0	3.6	3.7	3.3	3.7
4.8	4.6	4.2	4.4	4.8	3.5	3.0	2.7	2.7	3.5	5.3	4.8	4.3	4.7	4.9	3.6	3.1	3.4	3.6	4.9	5.6	4.8	3.9	4.0	3.9	4.3	4.4	4.0	3.7	3.5	3.3	4.5	4.6	4.8	5.8	5.1
4.8	4.8	5.4	5.8	5.1	5.0	5.1	4.5	4.3	3.8	4.3	4.8	5.4	5.6	5.2	5.1	5.1	4.9	5.0	5.5	4.8	4.9	4.8	4.8	4.2	4.0	3.8	4.0	3.8	4.2	5.3	5.5	5.1	4.8	4.6	5.1
4.0	3.8	4.3	4.6	4.5	4.6	4.2	3.3	3.8	4.6	4.6	4.7	5.2	4.7	4.2	4.5	4.6	4.2	4.1	4.6	4.7	4.8	4.3	4.5	4.6	4.5	4.5	4.3	4.2	4.9	4.3	4.4	4.5	4.1	4.6	4.4
3.8	3.6	3.6	3.8	3.8	3.5	3.3	3.5	3.8	3.9	3.6	3.8	3.9	3.6	3.7	4.1	4.0	4.2	4.5	4.2	4.4	4.1	3.8	3.8	3.6	3.5	3.6	3.8	3.6	3.5	3.4	3.4	3.3	3.4	3.6	4.1
3.5	3.5	3.4	3.3	3.4	3.7	3.3	3.2	3.5	3.4	3.1	3.3	3.5	3.4	3.5	3.3	3.4	3.2	3.4	3.2	3.3	3.3	3.1	3.1	3.0	2.9	3.1	2.9	2.8	2.9	2.9	2.8	3.0	2.9	3.1	3.4
2.9	2.9	3.1	3.1	3.2	3.5	3.3	3.0	2.8	2.9	2.8	2.9	2.9	2.9	3.1	3.1	3.0	2.9	2.9	2.6	2.5	2.6	4.2	6.1	4.6	2.8	4.8	6.0	6.2	5.5	6.3	7.2	5.3	3.9	3.0	3.1
2.0	1.9	2.3	3.1	4.1	3.9	3.6	3.5	3.5	3.5	2.6	2.3	2.5	2.9	3.0	4.0	5.1	6.1	7.0	7.3	8.0	7.2	5.8	4.3	6.6	6.5	5.1	4.2	4.8	5.4	4.6	3.4	3.8	3.9	4.7	2.2
5.2	4.9	4.7	4.4	4.2	4.1	4.1	4.1	4.1	3.9	4.5	5.1	5.6	5.5	5.3	4.7	4.6	4.6	4.2	3.9	3.8	3.8	3.4	3.2	3.3	3.6	3.9	4.1	4.5	4.8	4.6	4.0	3.6	4.1	5.5	5.3

Figure 32. ATOVS MEAN O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS4 (400 hPa)
NOAA15, using all observations

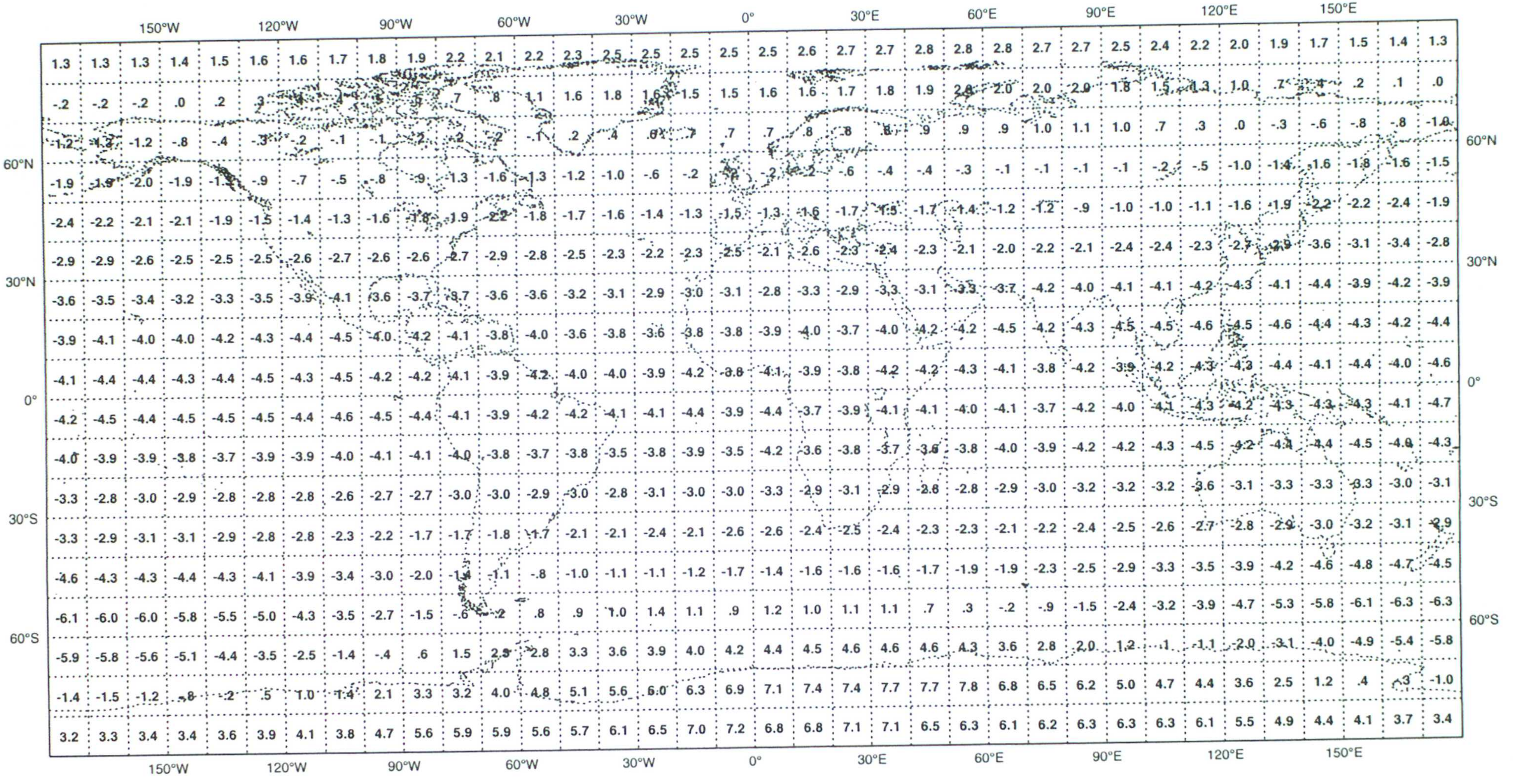
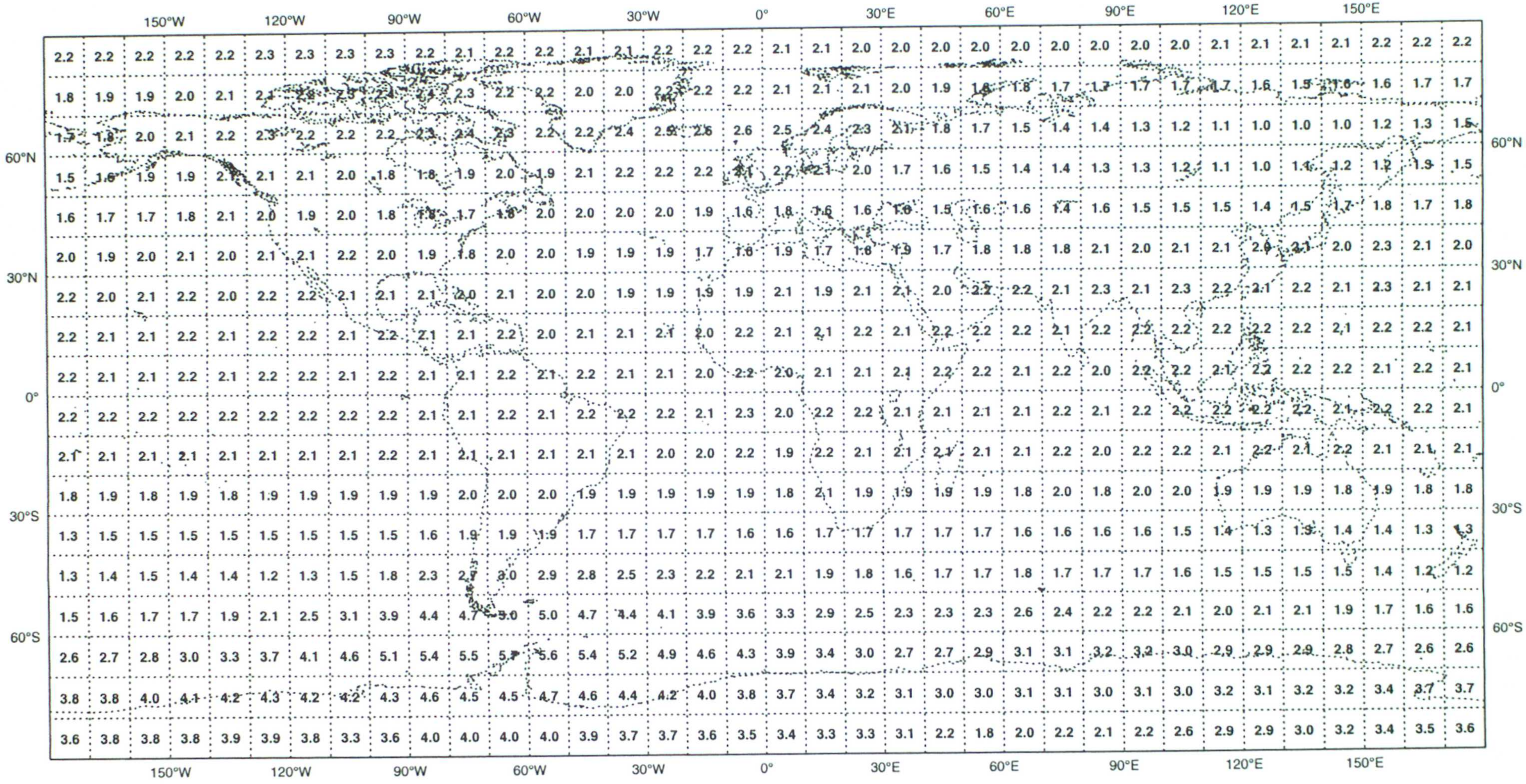
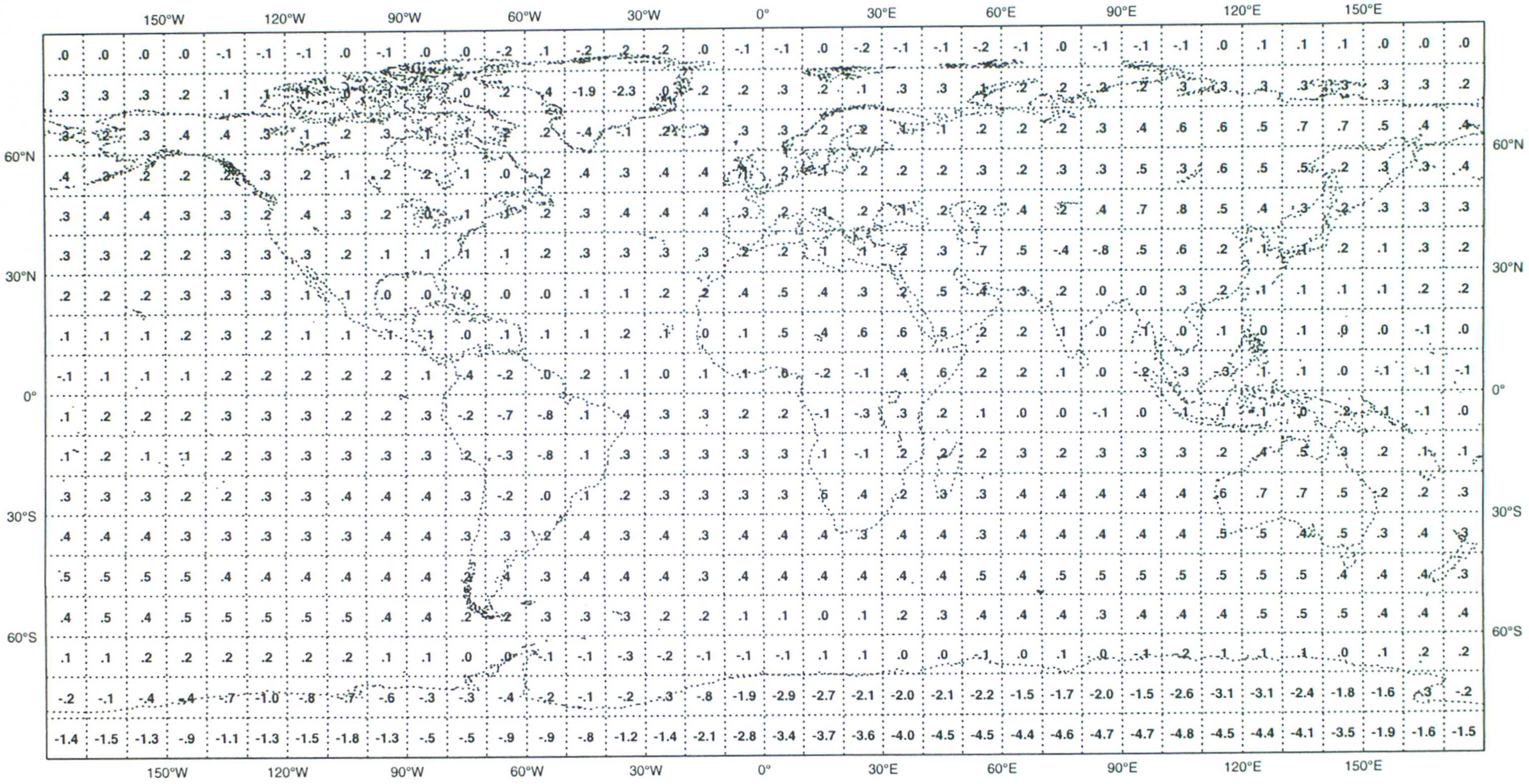

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
1.3 1.3 1.3 1.4 1.5 1.6 1.6 1.7 1.8 1.9 2.2 2.1 2.2 2.3 2.5 2.5 2.5 2.5 2.5 2.6 2.7 2.7 2.8 2.8 2.8 2.7 2.7 2.5 2.4 2.2 2.0 1.9 1.7 1.5 1.4 1.3
-.2 -.2 -.2 .0 .2 .3 .4 .4 .5 .5 .7 .8 1.1 1.6 1.8 1.6 1.5 1.5 1.6 1.6 1.7 1.8 1.9 2.0 2.0 2.0 2.9 1.8 1.5 1.3 1.0 .7 .4 .2 .1 .0
-1.2 -1.2 -1.2 -.8 -.4 -.3 -.2 -.1 -.1 -.2 -.2 -.2 -.1 .2 .4 .6 .7 .7 .7 .8 .8 .8 .9 .9 .9 1.0 1.1 1.0 .7 .3 .0 -.3 -.6 -.8 -.8 -1.0
60°N
-1.9 -1.9 -2.0 -1.9 -1.[illegible] -.9 -.7 -.5 -.8 -.9 -1.3 -1.6 -1.3 -1.2 -1.0 -.6 -.2 -.2 -.2 -.2 -.6 -.4 -.4 -.3 -.1 -.1 -.1 -.1 -.2 -.5 -1.0 -1.4 -1.6 -1.8 -1.6 -1.5
-2.4 -2.2 -2.1 -2.1 -1.9 -1.5 -1.4 -1.3 -1.6 -1.8 -1.9 -2.2 -1.8 -1.7 -1.6 -1.4 -1.3 -1.5 -1.3 -1.6 -1.7 -1.5 -1.7 -1.4 -1.2 -1.2 -.9 -1.0 -1.0 -1.1 -1.6 -1.9 -2.2 -2.2 -2.4 -1.9
-2.9 -2.9 -2.6 -2.5 -2.5 -2.5 -2.6 -2.7 -2.6 -2.6 -2.7 -2.9 -2.8 -2.5 -2.3 -2.2 -2.3 -2.5 -2.1 -2.6 -2.3 -2.4 -2.3 -2.1 -2.0 -2.2 -2.1 -2.4 -2.4 -2.3 -2.7 -2.9 -3.6 -3.1 -3.4 -2.8
30°N
-3.6 -3.5 -3.4 -3.2 -3.3 -3.5 -3.9 -4.1 -3.6 -3.7 -3.7 -3.6 -3.6 -3.2 -3.1 -2.9 -3.0 -3.1 -2.8 -3.3 -2.9 -3.3 -3.1 -3.3 -3.7 -4.2 -4.0 -4.1 -4.1 -4.2 -4.3 -4.1 -4.4 -3.9 -4.2 -3.9
-3.9 -4.1 -4.0 -4.0 -4.2 -4.3 -4.4 -4.5 -4.0 -4.2 -4.1 -3.8 -4.0 -3.6 -3.8 -3.6 -3.8 -3.8 -3.9 -4.0 -3.7 -4.0 -4.2 -4.2 -4.5 -4.2 -4.3 -4.5 -4.5 -4.6 -4.5 -4.6 -4.4 -4.3 -4.2 -4.4
-4.1 -4.4 -4.4 -4.3 -4.4 -4.5 -4.3 -4.5 -4.2 -4.2 -4.1 -3.9 -4.2 -4.0 -4.0 -3.9 -4.2 -3.8 -4.1 -3.9 -3.8 -4.2 -4.2 -4.3 -4.1 -3.8 -4.2 -3.9 -4.2 -4.3 -4.3 -4.4 -4.1 -4.4 -4.0 -4.6
0°
-4.2 -4.5 -4.4 -4.5 -4.5 -4.5 -4.4 -4.6 -4.5 -4.4 -4.1 -3.9 -4.2 -4.2 -4.1 -4.1 -4.4 -3.9 -4.4 -3.7 -3.9 -4.1 -4.1 -4.0 -4.1 -3.7 -4.2 -4.0 -4.1 -4.3 -4.2 -4.3 -4.3 -4.3 -4.1 -4.7
-4.0 -3.9 -3.9 -3.8 -3.7 -3.9 -3.9 -4.0 -4.1 -4.1 -4.0 -3.8 -3.7 -3.8 -3.5 -3.8 -3.9 -3.5 -4.2 -3.6 -3.8 -3.7 -3.6 -3.8 -4.0 -3.9 -4.2 -4.2 -4.3 -4.5 -4.2 -4.4 -4.4 -4.5 -4.9 -4.3
-3.3 -2.8 -3.0 -2.9 -2.8 -2.8 -2.8 -2.6 -2.7 -2.7 -3.0 -3.0 -2.9 -3.0 -2.8 -3.1 -3.0 -3.0 -3.3 -2.9 -3.1 -2.9 -2.8 -2.8 -2.9 -3.0 -3.2 -3.2 -3.2 -3.6 -3.1 -3.3 -3.3 -3.3 -3.0 -3.1
30°S
-3.3 -2.9 -3.1 -3.1 -2.9 -2.8 -2.8 -2.3 -2.2 -1.7 -1.7 -1.8 -1.7 -2.1 -2.1 -2.4 -2.1 -2.6 -2.6 -2.4 -2.5 -2.4 -2.3 -2.3 -2.1 -2.2 -2.4 -2.5 -2.6 -2.7 -2.8 -2.9 -3.0 -3.2 -3.1 -2.9
-4.6 -4.3 -4.3 -4.4 -4.3 -4.1 -3.9 -3.4 -3.0 -2.0 -1.4 -1.1 -.8 -1.0 -1.1 -1.1 -1.2 -1.7 -1.4 -1.6 -1.6 -1.6 -1.7 -1.9 -1.9 -2.3 -2.5 -2.9 -3.3 -3.5 -3.9 -4.2 -4.6 -4.8 -4.7 -4.5
-6.1 -6.0 -6.0 -5.8 -5.5 -5.0 -4.3 -3.5 -2.7 -1.5 -.6 -.2 .8 .9 1.0 1.4 1.1 .9 1.2 1.0 1.1 1.1 .7 .3 -.2 -.9 -1.5 -2.4 -3.2 -3.9 -4.7 -5.3 -5.8 -6.1 -6.3 -6.3
60°S
-5.9 -5.8 -5.6 -5.1 -4.4 -3.5 -2.5 -1.4 -.4 .6 1.5 2.5 2.8 3.3 3.6 3.9 4.0 4.2 4.4 4.5 4.6 4.6 4.6 4.3 3.6 2.8 2.0 1.2 .1 -1.1 -2.0 -3.1 -4.0 -4.9 -5.4 -5.8
-1.4 -1.5 -1.2 -.8 -.2 .5 1.0 1.4 2.1 3.3 3.2 4.0 4.8 5.1 5.6 6.0 6.3 6.9 7.1 7.4 7.4 7.7 7.7 7.8 6.8 6.5 6.2 5.0 4.7 4.4 3.6 2.5 1.2 .4 .3 -1.0
3.2 3.3 3.4 3.4 3.6 3.9 4.1 3.8 4.7 5.6 5.9 5.9 5.6 5.7 6.1 6.5 7.0 7.2 6.8 6.8 7.1 7.1 6.5 6.3 6.1 6.2 6.3 6.3 6.3 6.1 5.5 4.9 4.4 4.1 3.7 3.4
150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E

Figure 33. ATOVS SD O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS4 (400 hPa)
NOAA15, using all observations



2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.2	2.1	2.2	2.2	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.2	2.2
1.8	1.9	1.9	2.0	2.1	2.1	2.8	2.3	2.4	2.4	2.3	2.2	2.2	2.0	2.0	2.2	2.2	2.2	2.1	2.1	2.1	2.0	1.9	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.6	1.5	1.6	1.6	1.7	1.7
1.7	1.8	2.0	2.1	2.2	2.3	2.2	2.2	2.2	2.3	2.4	2.3	2.2	2.2	2.4	2.5	2.6	2.6	2.5	2.4	2.3	2.1	1.8	1.7	1.5	1.4	1.4	1.3	1.2	1.1	1.0	1.0	1.0	1.2	1.3	1.5
1.5	1.6	1.9	1.9	2.1	2.1	2.1	2.0	1.8	1.8	1.9	2.0	1.9	2.1	2.2	2.2	2.2	2.1	2.2	2.1	2.0	1.7	1.6	1.5	1.4	1.4	1.3	1.3	1.2	1.1	1.0	1.1	1.2	1.2	1.3	1.5
1.6	1.7	1.7	1.8	2.1	2.0	1.9	2.0	1.8	1.8	1.7	1.8	2.0	2.0	2.0	2.0	1.9	1.6	1.8	1.6	1.6	1.6	1.5	1.6	1.6	1.4	1.6	1.5	1.5	1.5	1.4	1.5	1.7	1.8	1.7	1.8
2.0	1.9	2.0	2.1	2.0	2.1	2.1	2.2	2.0	1.9	1.8	2.0	2.0	1.9	1.9	1.9	1.7	1.6	1.9	1.7	1.6	1.9	1.7	1.8	1.8	1.8	2.1	2.0	2.1	2.1	2.0	2.1	2.0	2.3	2.1	2.0
2.2	2.0	2.1	2.2	2.0	2.2	2.2	2.1	2.1	2.1	2.0	2.1	2.0	2.0	1.9	1.9	1.9	1.9	2.1	1.9	2.1	2.1	2.0	2.2	2.2	2.1	2.3	2.1	2.3	2.2	2.1	2.2	2.1	2.3	2.1	2.1
2.2	2.1	2.1	2.2	2.1	2.2	2.2	2.1	2.2	2.1	2.1	2.2	2.0	2.1	2.1	2.1	2.0	2.2	2.1	2.1	2.2	2.1	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.1
2.2	2.1	2.1	2.2	2.1	2.2	2.2	2.1	2.2	2.1	2.1	2.2	2.1	2.2	2.1	2.1	2.0	2.2	2.0	2.1	2.1	2.1	2.2	2.2	2.1	2.2	2.0	2.2	2.2	2.1	2.2	2.2	2.2	2.1	2.2	2.1
2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.2	2.1	2.2	2.2	2.2	2.1	2.3	2.0	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.1
2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.2	1.9	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.0	2.2	2.2	2.1	2.2	2.1	2.2	2.1	2.1	2.1
1.8	1.9	1.8	1.9	1.8	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.8	2.1	1.9	1.9	1.9	1.9	1.8	2.0	1.8	2.0	2.0	1.9	1.9	1.9	1.8	1.9	1.8	1.8
1.3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.9	1.9	1.9	1.7	1.7	1.7	1.7	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.5	1.4	1.3	1.3	1.4	1.4	1.3	1.3
1.3	1.4	1.5	1.4	1.4	1.2	1.3	1.5	1.8	2.3	2.7	3.0	2.9	2.8	2.5	2.3	2.2	2.1	2.1	1.9	1.8	1.6	1.7	1.7	1.8	1.7	1.7	1.7	1.6	1.5	1.5	1.5	1.5	1.4	1.2	1.2
1.5	1.6	1.7	1.7	1.9	2.1	2.5	3.1	3.9	4.4	4.7	5.0	5.0	4.7	4.4	4.1	3.9	3.6	3.3	2.9	2.5	2.3	2.3	2.3	2.6	2.4	2.2	2.2	2.1	2.0	2.1	2.1	1.9	1.7	1.6	1.6
2.6	2.7	2.8	3.0	3.3	3.7	4.1	4.6	5.1	5.4	5.5	5.7	5.6	5.4	5.2	4.9	4.6	4.3	3.9	3.4	3.0	2.7	2.7	2.9	3.1	3.1	3.2	3.2	3.0	2.9	2.9	2.9	2.8	2.7	2.6	2.6
3.8	3.8	4.0	4.1	4.2	4.3	4.2	4.2	4.3	4.6	4.5	4.5	4.7	4.6	4.4	4.2	4.0	3.8	3.7	3.4	3.2	3.1	3.0	3.0	3.1	3.1	3.0	3.1	3.0	3.2	3.1	3.2	3.2	3.4	3.7	3.7
3.6	3.8	3.8	3.8	3.9	3.9	3.8	3.3	3.6	4.0	4.0	4.0	4.0	3.9	3.7	3.7	3.6	3.5	3.4	3.3	3.3	3.1	2.2	1.8	2.0	2.2	2.1	2.2	2.6	2.9	2.9	3.0	3.2	3.4	3.5	3.6

Figure 34. ATOVS MEAN O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: AMSUA-5 (700 hPa)
NOAA15, using all observations



.0	.0	.0	.0	-.1	-.1	-.1	.0	-.1	.0	.0	-.2	.1	-.2	.2	.2	.0	-.1	-.1	.0	-.2	-.1	-.1	-.2	-.1	.0	-.1	-.1	-.1	.0	.1	.1	.1	.0	.0	.0
.3	.3	.3	.2	.1	.1	.1	.0	.1	.2	.0	.2	.4	-1.9	-2.3	.0	.2	.2	.3	.2	.1	.3	.3	.1	.2	.2	.2	.2	.3	.3	.3	.3	.3	.3	.3	.2
.3	.2	.3	.4	.4	.3	.1	.2	.3	.1	.1	.2	.2	-.4	-.1	.2	.3	.3	.3	.2	.2	.1	.1	.2	.2	.2	.3	.4	.6	.6	.5	.7	.7	.5	.4	.4
.4	.3	.2	.2	.2	.3	.2	.1	.2	.2	.1	.0	.2	.4	.3	.4	.4	.1	.2	.1	.2	.2	.2	.3	.2	.3	.3	.5	.3	.6	.5	.5	.2	.3	.3	.4
.3	.4	.4	.3	.3	.2	.4	.3	.2	.0	.1	.1	.2	.3	.4	.4	.4	.3	.2	.1	.2	.1	.2	.2	.4	.2	.4	.7	.8	.5	.4	.3	.2	.3	.3	.3
.3	.3	.2	.2	.3	.3	.3	.2	.1	.1	.1	.1	.2	.3	.3	.3	.3	.2	.2	.1	.1	.2	.3	.7	.5	-.4	-.8	.5	.6	.2	.1	.1	.2	.1	.3	.2
.2	.2	.2	.3	.3	.3	.1	.1	.0	.0	.0	.0	.0	.1	.1	.2	.2	.4	.5	.4	.3	.2	.5	.4	.3	.2	.0	.0	.3	.2	.1	.1	.1	.1	.2	.2
.1	.1	.1	.2	.3	.2	.1	.1	-.1	-.1	.0	.1	.1	.1	.2	.1	.0	.1	.5	.4	.6	.6	.5	.2	.2	.1	.0	-.1	.0	.1	.0	.1	.0	.0	-.1	.0
-.1	.1	.1	.1	.2	.2	.2	.2	.2	.1	-.4	-.2	.0	.2	.1	.0	.1	.1	.0	-.2	-.1	.4	.6	.2	.2	.1	.0	-.2	-.3	-.3	.1	.1	.0	-.1	-.1	-.1
.1	.2	.2	.2	.3	.3	.3	.2	.2	.3	-.2	-.7	-.8	.1	.4	.3	.3	.2	.2	-.1	-.3	.3	.2	.1	.0	.0	-.1	.0	-.1	.1	.1	.0	-.2	-.1	-.1	.0
.1	.2	.1	.1	.2	.3	.3	.3	.3	.3	.2	-.3	-.8	.1	.3	.3	.3	.3	.3	.1	-.1	.2	.2	.2	.3	.2	.3	.3	.3	.2	.4	.5	.3	.2	.1	.1
.3	.3	.3	.2	.2	.3	.3	.4	.4	.4	.3	-.2	.0	.1	.2	.3	.3	.3	.3	.6	.4	.2	.3	.3	.4	.4	.4	.4	.4	.6	.7	.7	.5	.2	.2	.3
.4	.4	.4	.3	.3	.3	.3	.3	.4	.4	.3	.3	.2	.4	.3	.4	.3	.4	.4	.4	.3	.4	.4	.3	.4	.4	.4	.4	.4	.5	.5	.4	.5	.3	.4	.3
.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.2	.4	.3	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.5	.4	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.3
.4	.5	.4	.5	.5	.5	.5	.5	.4	.4	.2	.2	.3	.3	.3	.2	.2	.1	.1	.0	.1	.2	.3	.4	.4	.4	.3	.4	.4	.4	.5	.5	.5	.4	.4	.4
.1	.1	.2	.2	.2	.2	.2	.2	.1	.1	.0	.0	-.1	-.1	-.3	-.2	-.1	-.1	-.1	.1	.1	.0	.0	-.1	.0	.1	.0	-.1	-.2	-.1	.1	.1	.0	.1	.2	.2
-.2	-.1	-.4	-.4	-.7	-1.0	-.8	-.7	-.6	-.3	-.3	-.4	-.2	-.1	-.2	-.3	-.8	-1.9	-2.9	-2.7	-2.1	-2.0	-2.1	-2.2	-1.5	-1.7	-2.0	-1.5	-2.6	-3.1	-3.1	-2.4	-1.8	-1.6	-.3	-.2
-1.4	-1.5	-1.3	-.9	-1.1	-1.3	-1.5	-1.8	-1.3	-.5	-.5	-.9	-.9	-.8	-1.2	-1.4	-2.1	-2.8	-3.4	-3.7	-3.6	-4.0	-4.5	-4.5	-4.4	-4.6	-4.7	-4.7	-4.8	-4.5	-4.4	-4.1	-3.5	-1.9	-1.6	-1.5

Figure 35. ATOVS SD O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: AMSUA-5 (700 hPa)
NOAA15, using all observations

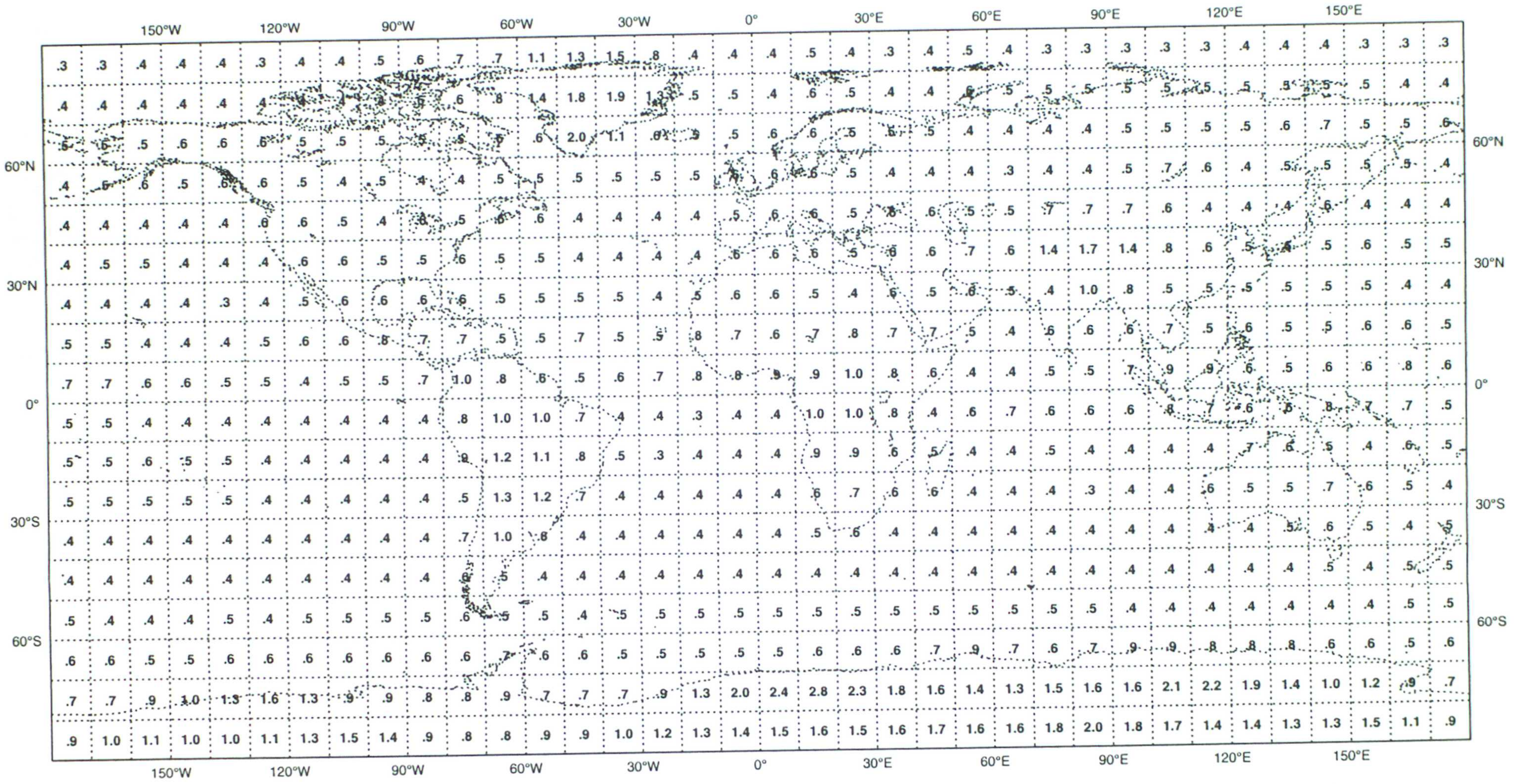

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 36. ATOVS MEAN O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: AMSUA-7 (300 hPa)
NOAA15, using all observations

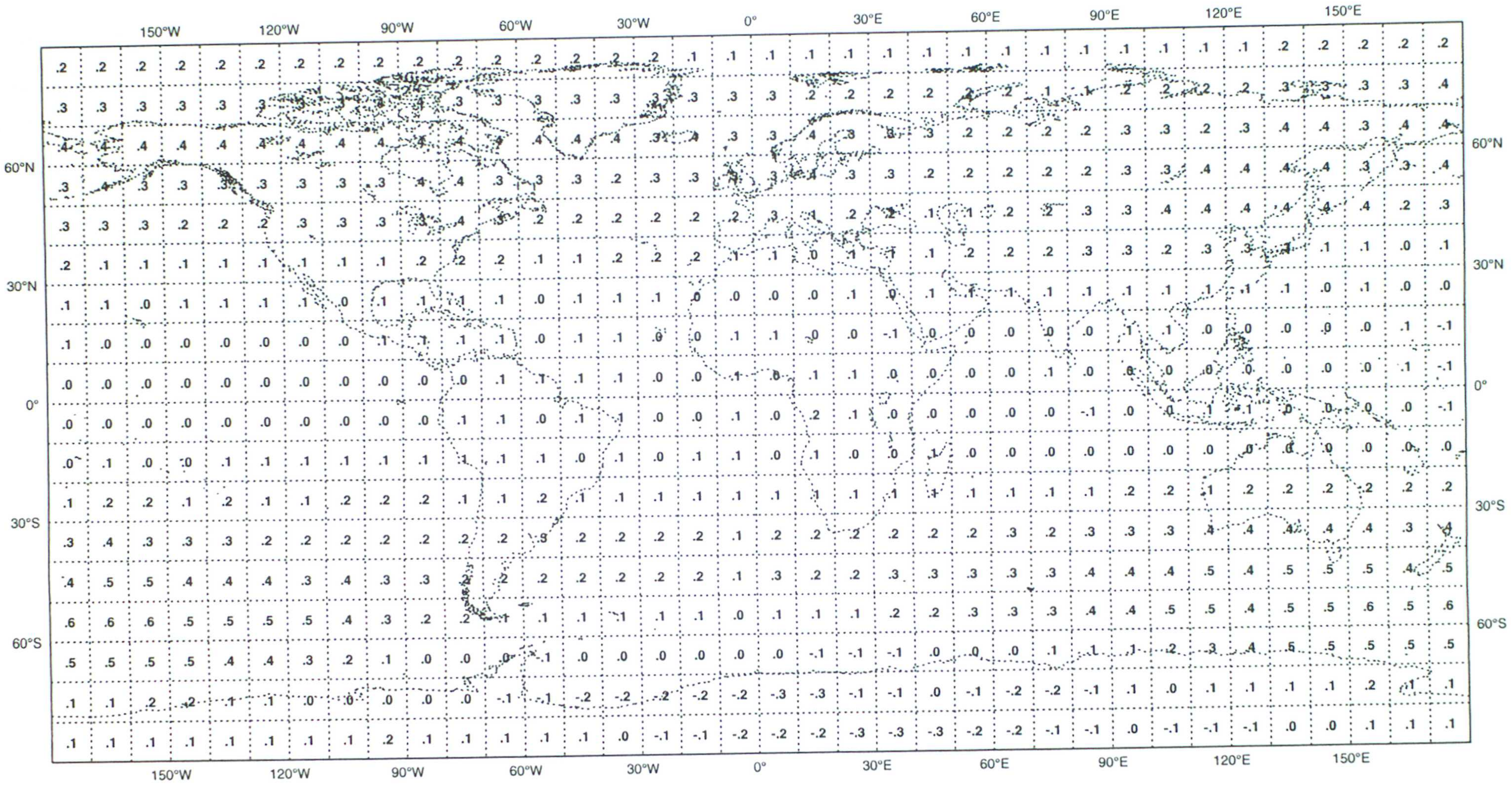

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 37. ATOVS SD O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: AMSUA-7 (300 hPa)
NOAA15, using all observations

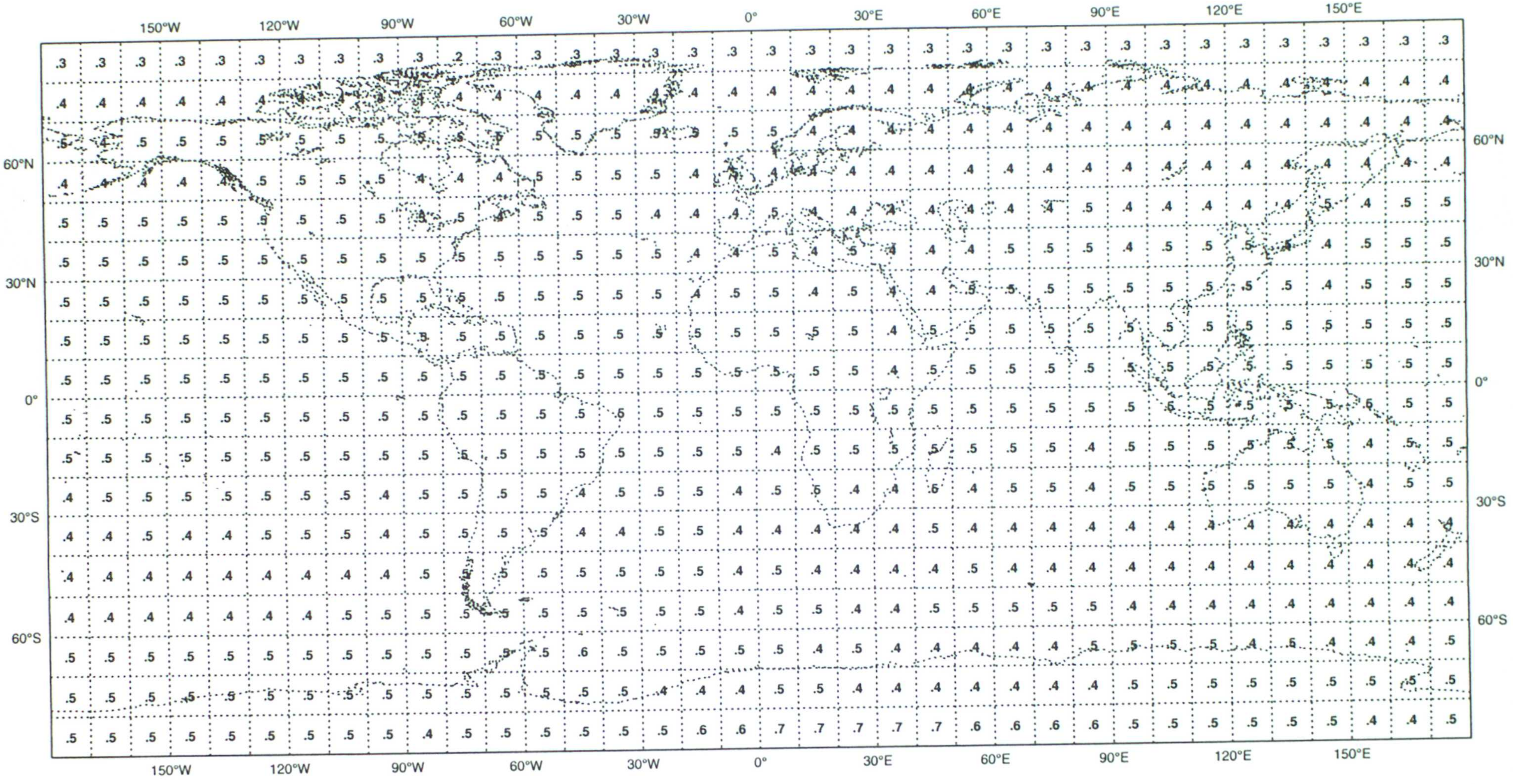

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 38. ATOVS MEAN O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: AMSUA-9 (100 hPa)
NOAA15, using all observations

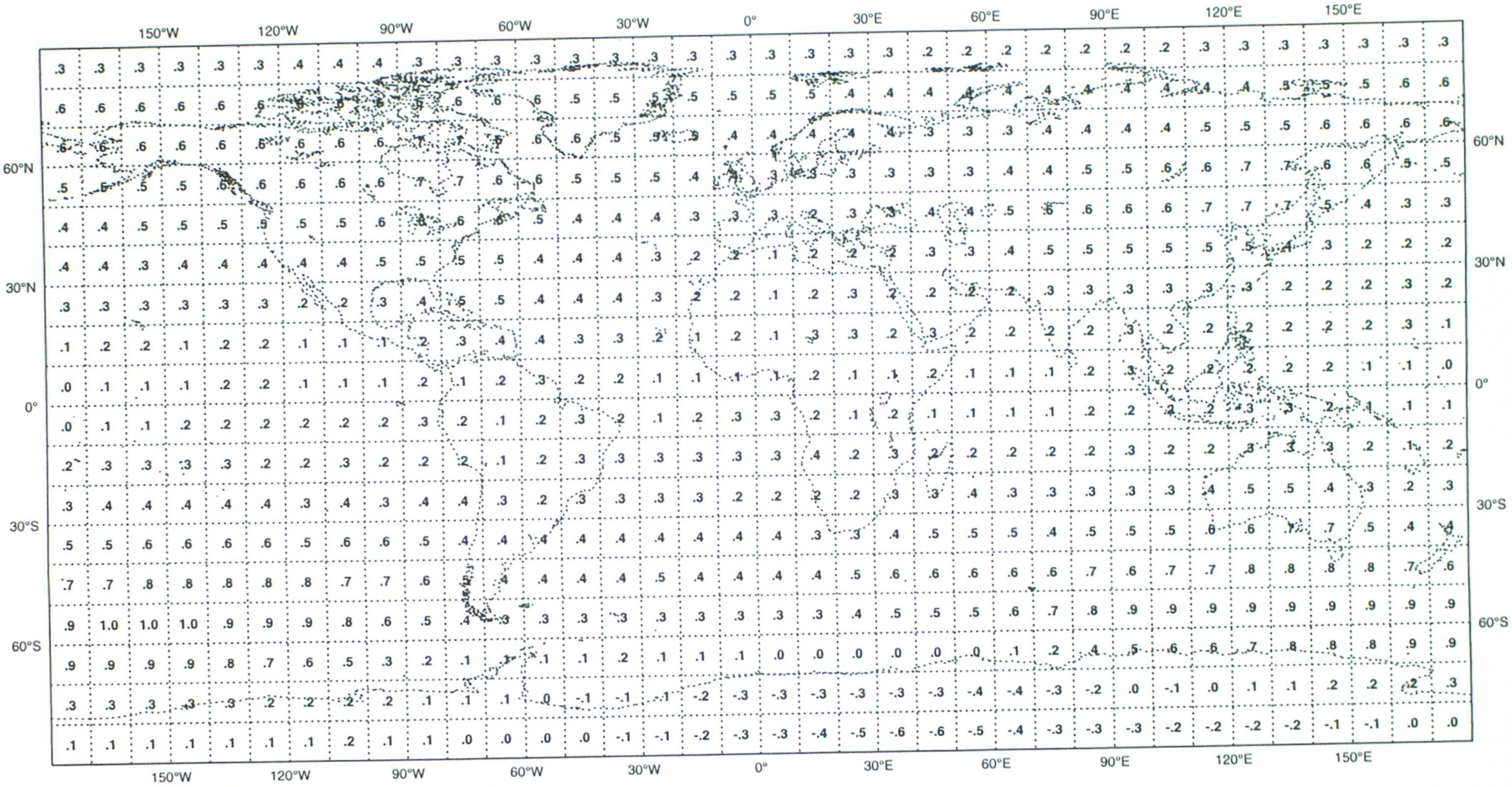

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 39. ATOVS SD O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: AMSUA-9 (100 hPa)
NOAA15, using all observations

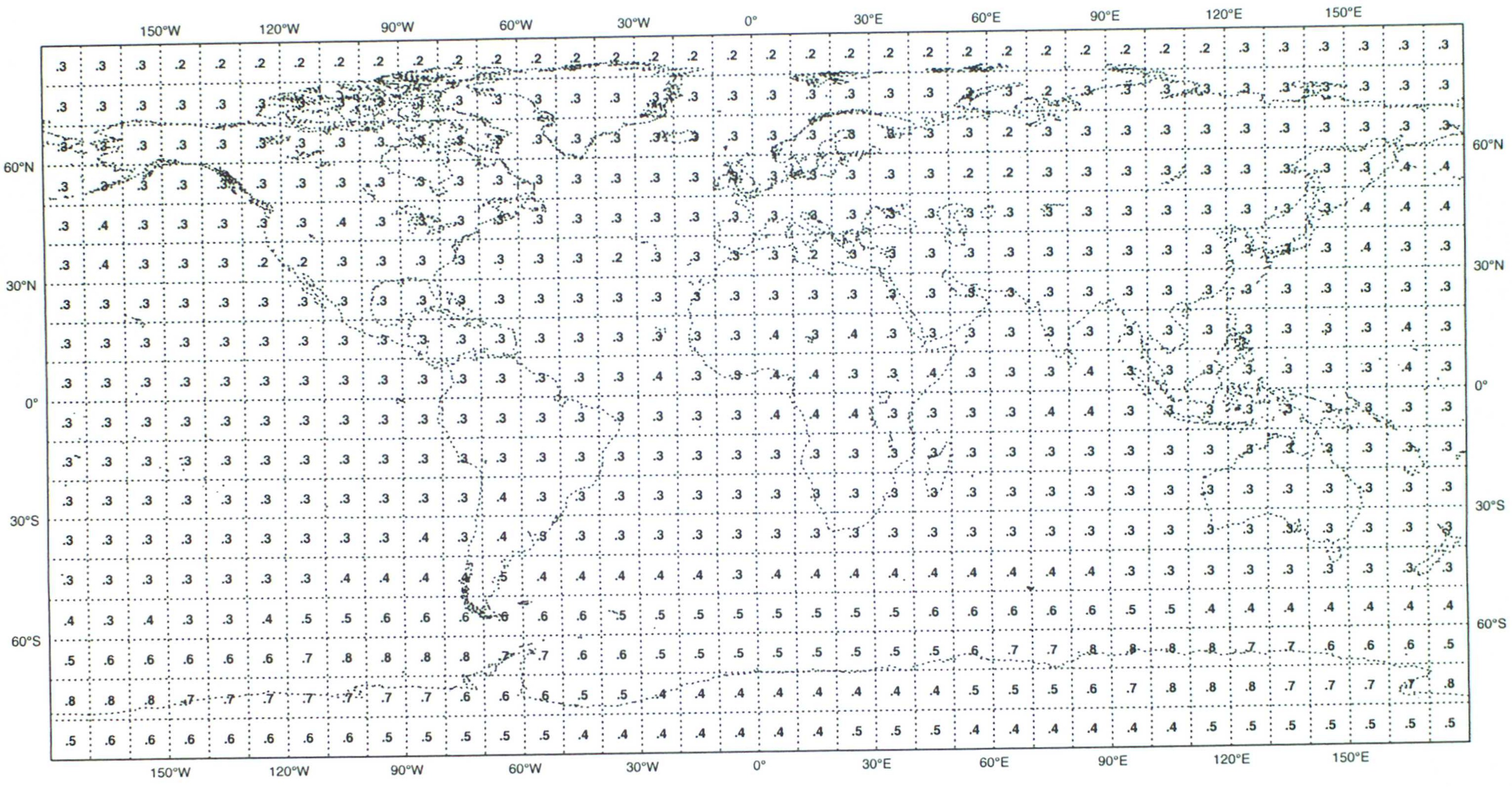
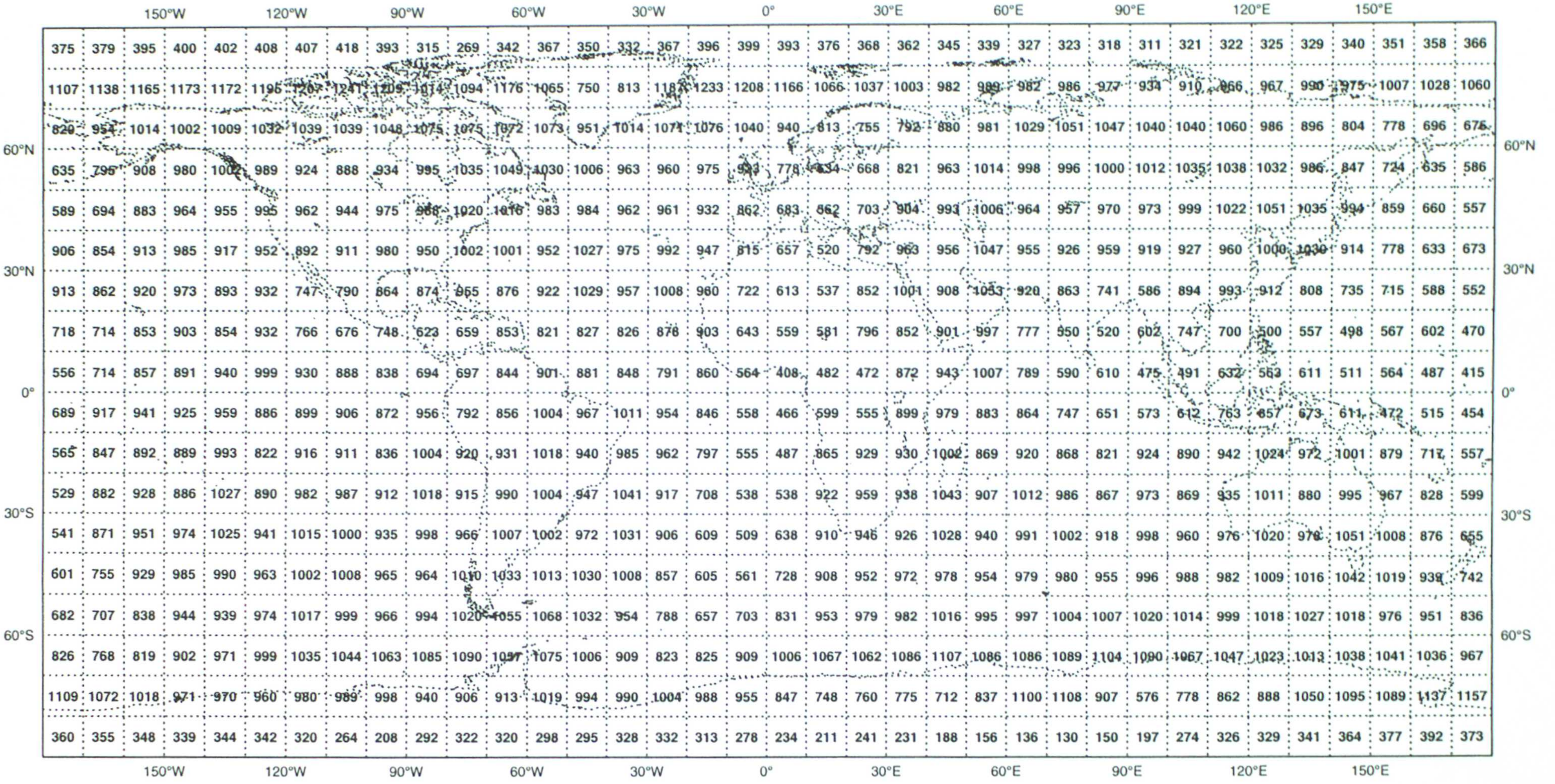
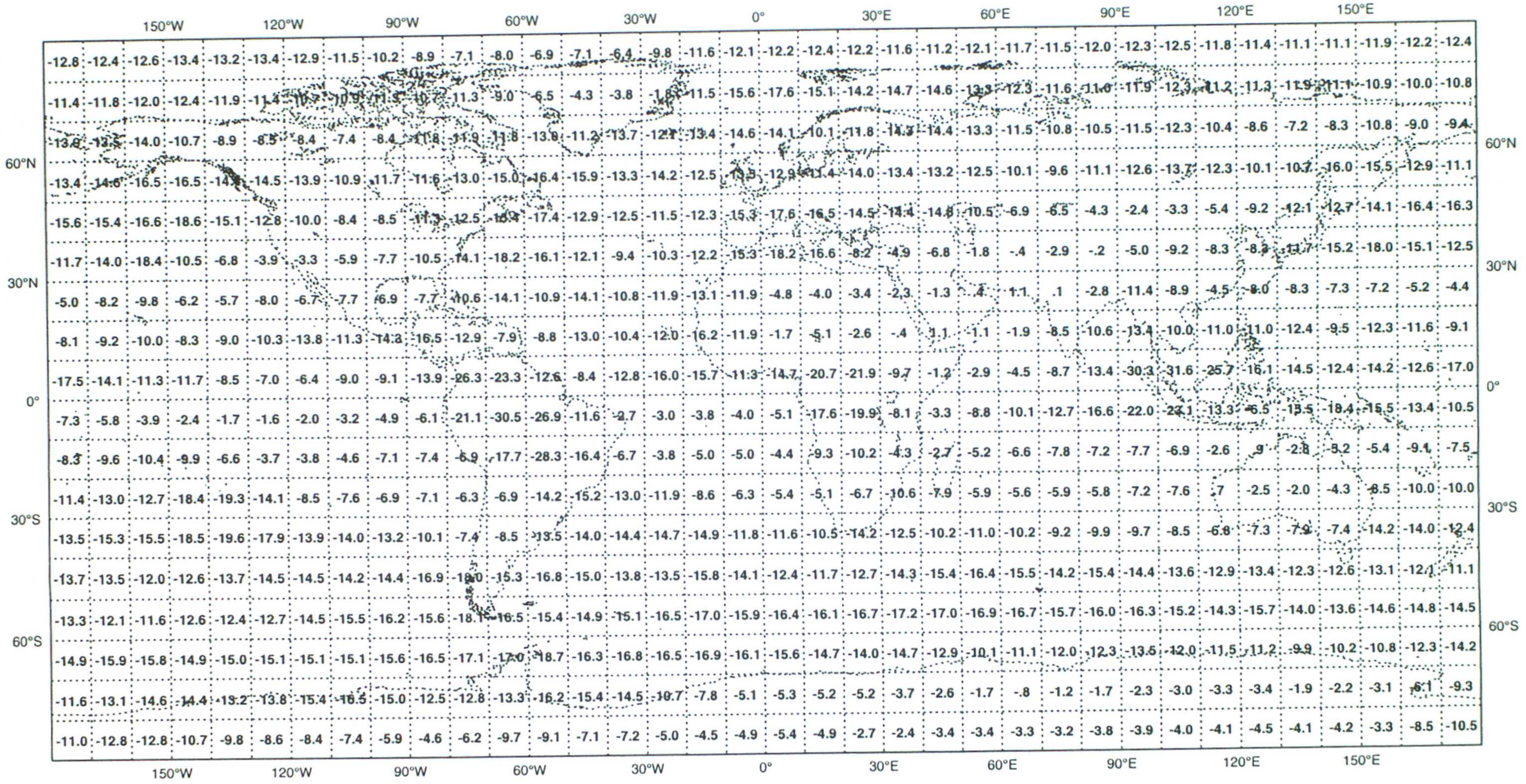

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 40. ATOVS mean daily count. OCTOBER 2003
NOAA16, using all observations
Global average number of observations in 24 hours = 538686



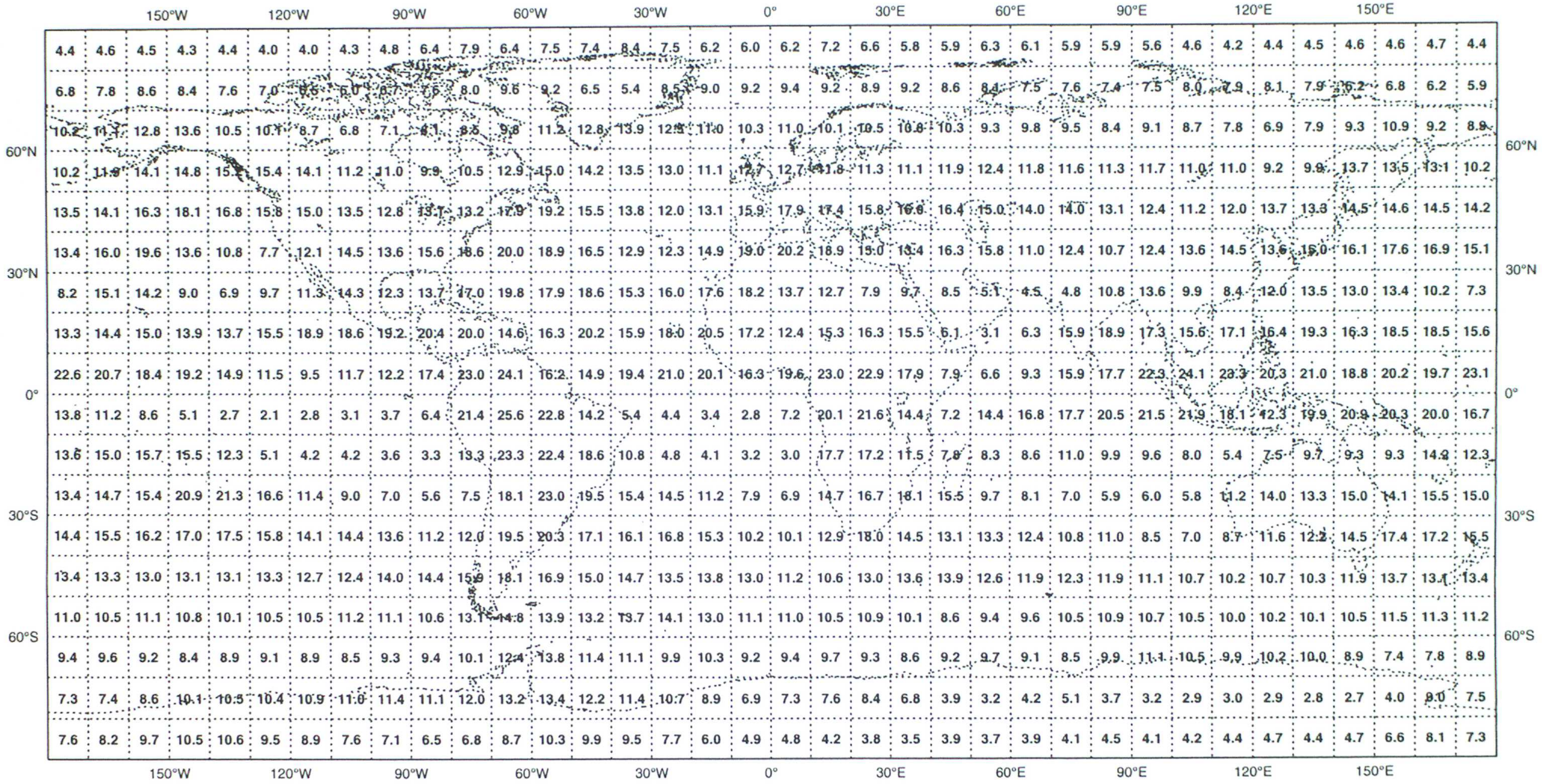
375	379	395	400	402	408	407	418	393	315	269	342	367	350	332	367	396	399	393	376	368	362	345	339	327	323	318	311	321	322	325	329	340	351	358	366
1107	1138	1165	1173	1172	1195	1207	1241	1209	1014	1094	1176	1065	750	813	1187	1233	1208	1166	1066	1037	1003	982	989	982	986	977	934	910	866	967	990	975	1007	1028	1060
820	954	1014	1002	1009	1032	1039	1039	1048	1075	1075	1072	1073	951	1014	1071	1076	1040	940	813	755	792	880	981	1029	1051	1047	1040	1040	1060	986	896	804	778	696	676
635	795	908	980	1002	989	924	888	934	995	1035	1049	1030	1006	963	960	975	993	778	634	668	821	963	1014	998	996	1000	1012	1035	1038	1032	986	847	724	635	586
589	694	883	964	955	995	962	944	975	988	1020	1016	983	984	962	961	932	862	683	862	703	904	993	1006	964	957	970	973	999	1022	1051	1035	994	859	660	557
906	854	913	985	917	952	892	911	980	950	1002	1001	952	1027	975	992	947	815	657	520	792	963	956	1047	955	926	959	919	927	960	1000	1030	914	778	633	673
913	862	920	973	893	932	747	790	864	874	965	876	922	1029	957	1008	960	722	613	537	852	1001	908	1053	920	863	741	586	894	993	912	808	735	715	588	552
718	714	853	903	854	932	766	676	748	623	659	853	821	827	826	878	903	643	559	581	796	852	901	997	777	950	520	602	747	700	500	557	498	567	602	470
556	714	857	891	940	999	930	888	838	694	697	844	901	881	848	791	860	564	408	482	472	872	943	1007	789	590	610	475	491	632	563	611	511	564	487	415
689	917	941	925	959	886	899	906	872	956	792	856	1004	967	1011	954	846	558	466	599	555	899	979	883	864	747	651	573	612	763	657	673	611	472	515	454
565	847	892	889	993	822	916	911	836	1004	920	931	1018	940	985	962	797	555	487	865	929	930	1002	869	920	868	821	924	890	942	1024	972	1001	879	717	557
529	882	928	886	1027	890	982	987	912	1018	915	990	1004	947	1041	917	708	538	538	922	959	938	1043	907	1012	986	867	973	869	935	1011	880	995	967	828	599
541	871	951	974	1025	941	1015	1000	935	998	966	1007	1002	972	1031	906	609	509	638	910	946	926	1028	940	991	1002	918	998	960	976	1020	978	1051	1008	876	655
601	755	929	985	990	963	1002	1008	965	964	1010	1033	1013	1030	1008	857	605	561	728	908	952	972	978	954	979	980	955	996	988	982	1009	1016	1042	1019	938	742
682	707	838	944	939	974	1017	999	966	994	1020	1055	1068	1032	954	788	657	703	831	953	979	982	1016	995	997	1004	1007	1020	1014	999	1018	1027	1018	976	951	836
826	768	819	902	971	999	1035	1044	1063	1085	1090	1097	1075	1006	909	823	825	909	1006	1067	1062	1086	1107	1086	1086	1089	1104	1090	1067	1047	1023	1013	1038	1041	1036	967
1109	1072	1018	971	970	960	980	989	998	940	906	913	1019	994	990	1004	988	955	847	748	760	775	712	837	1100	1108	907	576	778	862	888	1050	1095	1089	1137	1157
360	355	348	339	344	342	320	264	208	292	322	320	298	295	328	332	313	278	234	211	241	231	188	156	136	130	150	197	274	326	329	341	364	377	392	373

Figure 41. ATOVS MEAN O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS8 (Surface)
NOAA16, using all observations



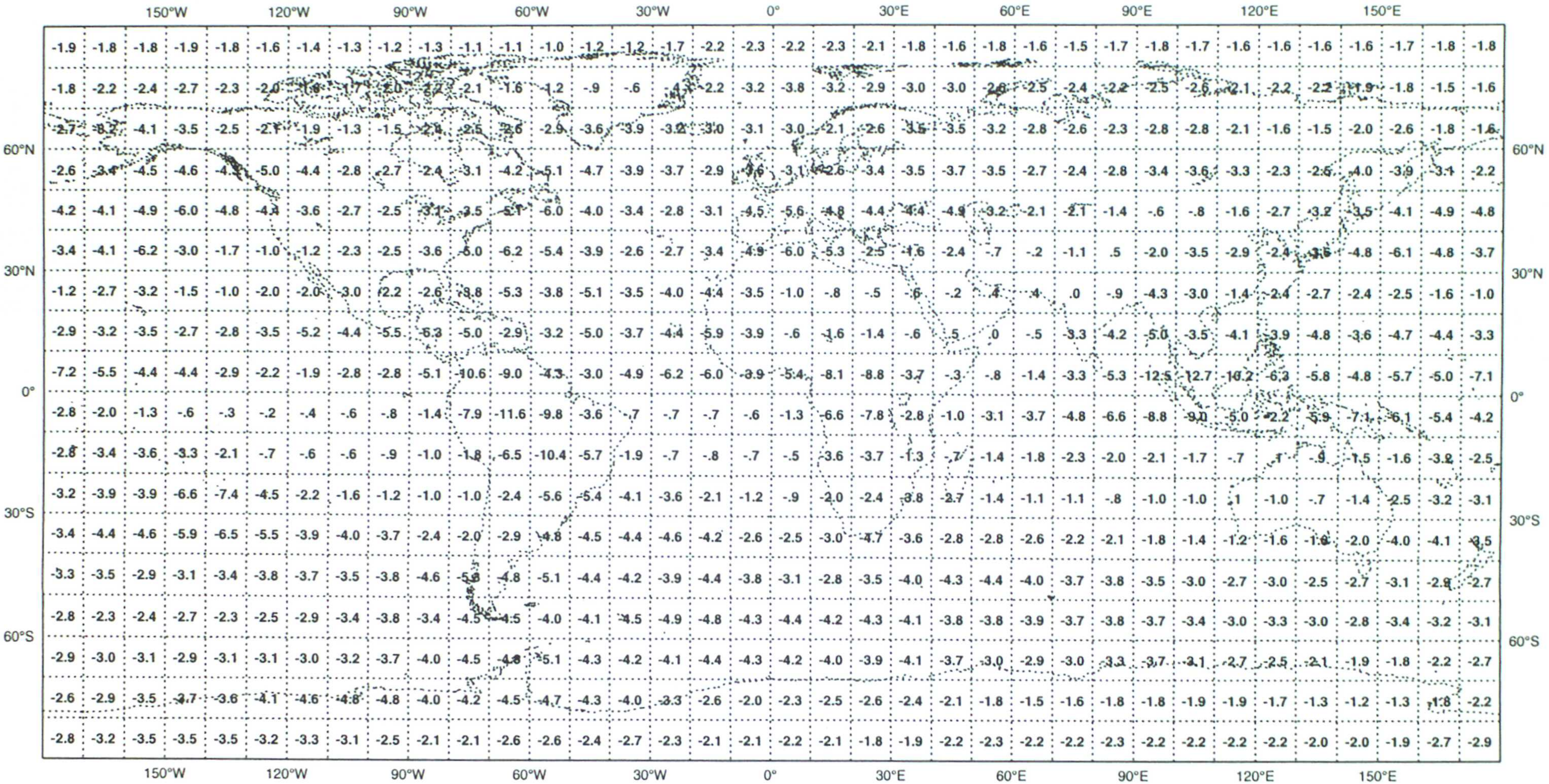
-12.8	-12.4	-12.6	-13.4	-13.2	-13.4	-12.9	-11.5	-10.2	-8.9	-7.1	-8.0	-6.9	-7.1	-6.4	-9.8	-11.6	-12.1	-12.2	-12.4	-12.2	-11.6	-11.2	-12.1	-11.7	-11.5	-12.0	-12.3	-12.5	-11.8	-11.4	-11.1	-11.1	-11.9	-12.2	-12.4
-11.4	-11.8	-12.0	-12.4	-11.9	-11.4	-10.7	-10.9	-11.3	-10.7	-11.3	-9.0	-6.5	-4.3	-3.8	-1.8	-11.5	-15.6	-17.6	-15.1	-14.2	-14.7	-14.6	-13.3	-12.3	-11.6	-11.0	-11.9	-12.3	-11.2	-11.3	-11.9	-11.1	-10.9	-10.0	-10.8
-13.8	-13.5	-14.0	-10.7	-8.9	-8.5	-8.4	-7.4	-8.4	-11.8	-11.9	-11.8	-13.8	-11.2	-13.7	-12.1	-13.4	-14.6	-14.1	-10.1	-11.8	-14.3	-14.4	-13.3	-11.5	-10.8	-10.5	-11.5	-12.3	-10.4	-8.6	-7.2	-8.3	-10.8	-9.0	-9.4
-13.4	-14.6	-16.5	-16.5	[illegible]	-14.5	-13.9	-10.9	-11.7	-11.6	-13.0	-15.0	-16.4	-15.9	-13.3	-14.2	-12.5	-13.5	-12.9	-11.4	-14.0	-13.4	-13.2	-12.5	-10.1	-9.6	-11.1	-12.6	-13.7	-12.3	-10.1	-10.7	-16.0	-15.5	-12.9	-11.1
-15.6	-15.4	-16.6	-18.6	-15.1	-12.8	-10.0	-8.4	-8.5	-11.3	-12.5	-16.4	-17.4	-12.9	-12.5	-11.5	-12.3	-15.3	-17.6	-16.5	-14.5	-14.4	-14.8	-10.5	-6.9	-6.5	-4.3	-2.4	-3.3	-5.4	-9.2	-12.1	-12.7	-14.1	-16.4	-16.3
-11.7	-14.0	-18.4	-10.5	-6.8	-3.9	-3.3	-5.9	-7.7	-10.5	-14.1	-18.2	-16.1	-12.1	-9.4	-10.3	-12.2	-15.3	-18.2	-16.6	-8.2	-4.9	-6.8	-1.8	-.4	-2.9	-.2	-5.0	-9.2	-8.3	-8.3	-11.7	-15.2	-18.0	-15.1	-12.5
-5.0	-8.2	-9.8	-6.2	-5.7	-8.0	-6.7	-7.7	-6.9	-7.7	-10.6	-14.1	-10.9	-14.1	-10.8	-11.9	-13.1	-11.9	-4.8	-4.0	-3.4	-2.3	-1.3	.4	1.1	.1	-2.8	-11.4	-8.9	-4.5	-8.0	-8.3	-7.3	-7.2	-5.2	-4.4
-8.1	-9.2	-10.0	-8.3	-9.0	-10.3	-13.8	-11.3	-14.3	-16.5	-12.9	-7.9	-8.8	-13.0	-10.4	-12.0	-16.2	-11.9	-1.7	-5.1	-2.6	-.4	1.1	-1.1	-1.9	-8.5	-10.6	-13.4	-10.0	-11.0	-11.0	-12.4	-9.5	-12.3	-11.6	-9.1
-17.5	-14.1	-11.3	-11.7	-8.5	-7.0	-6.4	-9.0	-9.1	-13.9	-26.3	-23.3	-12.6	-8.4	-12.8	-16.0	-15.7	-11.3	-14.7	-20.7	-21.9	-9.7	-1.2	-2.9	-4.5	-8.7	-13.4	-30.3	-31.6	-25.7	-16.1	-14.5	-12.4	-14.2	-12.6	-17.0
-7.3	-5.8	-3.9	-2.4	-1.7	-1.6	-2.0	-3.2	-4.9	-6.1	-21.1	-30.5	-26.9	-11.6	-2.7	-3.0	-3.8	-4.0	-5.1	-17.6	-19.9	-8.1	-3.3	-8.8	-10.1	-12.7	-16.6	-22.0	-23.1	-13.3	-6.5	-13.5	-18.4	-15.5	-13.4	-10.5
-8.3	-9.6	-10.4	-9.9	-6.6	-3.7	-3.8	-4.6	-7.1	-7.4	-6.9	-17.7	-28.3	-16.4	-6.7	-3.8	-5.0	-5.0	-4.4	-9.3	-10.2	-4.3	-2.7	-5.2	-6.6	-7.8	-7.2	-7.7	-6.9	-2.6	.9	-2.8	-5.2	-5.4	-9.1	-7.5
-11.4	-13.0	-12.7	-18.4	-19.3	-14.1	-8.5	-7.6	-6.9	-7.1	-6.3	-6.9	-14.2	-15.2	-13.0	-11.9	-8.6	-6.3	-5.4	-5.1	-6.7	-10.6	-7.9	-5.9	-5.6	-5.9	-5.8	-7.2	-7.6	.7	-2.5	-2.0	-4.3	-8.5	-10.0	-10.0
-13.5	-15.3	-15.5	-18.5	-19.6	-17.9	-13.9	-14.0	-13.2	-10.1	-7.4	-8.5	-13.5	-14.0	-14.4	-14.7	-14.9	-11.8	-11.6	-10.5	-14.2	-12.5	-10.2	-11.0	-10.2	-9.2	-9.9	-9.7	-8.5	-6.8	-7.3	-7.9	-7.4	-14.2	-14.0	-12.4
-13.7	-13.5	-12.0	-12.6	-13.7	-14.5	-14.5	-14.2	-14.4	-16.9	-18.0	-15.3	-16.8	-15.0	-13.8	-13.5	-15.8	-14.1	-12.4	-11.7	-12.7	-14.3	-15.4	-16.4	-15.5	-14.2	-15.4	-14.4	-13.6	-12.9	-13.4	-12.3	-12.6	-13.1	-12.1	-11.1
-13.3	-12.1	-11.6	-12.6	-12.4	-12.7	-14.5	-15.5	-16.2	-15.6	-18.1	-16.5	-15.4	-14.9	-15.1	-16.5	-17.0	-15.9	-16.4	-16.1	-16.7	-17.2	-17.0	-16.9	-16.7	-15.7	-16.0	-16.3	-15.2	-14.3	-15.7	-14.0	-13.6	-14.6	-14.8	-14.5
-14.9	-15.9	-15.8	-14.9	-15.0	-15.1	-15.1	-15.1	-15.6	-16.5	-17.1	-17.0	-18.7	-16.3	-16.8	-16.5	-16.9	-16.1	-15.6	-14.7	-14.0	-14.7	-12.9	-10.1	-11.1	-12.0	-12.3	-13.6	-12.0	-11.5	-11.2	-9.9	-10.2	-10.8	-12.3	-14.2
-11.6	-13.1	-14.6	-14.4	-13.2	-13.8	-15.4	-16.5	-15.0	-12.5	-12.8	-13.3	-16.2	-15.4	-14.5	-10.7	-7.8	-5.1	-5.3	-5.2	-5.2	-3.7	-2.6	-1.7	-.8	-1.2	-1.7	-2.3	-3.0	-3.3	-3.4	-1.9	-2.2	-3.1	-6.1	-9.3
-11.0	-12.8	-12.8	-10.7	-9.8	-8.6	-8.4	-7.4	-5.9	-4.6	-6.2	-9.7	-9.1	-7.1	-7.2	-5.0	-4.5	-4.9	-5.4	-4.9	-2.7	-2.4	-3.4	-3.4	-3.3	-3.2	-3.8	-3.9	-4.0	-4.1	-4.5	-4.1	-4.2	-3.3	-8.5	-10.5

Figure 42. ATOVS SD O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS8 (Surface)
NOAA16, using all observations



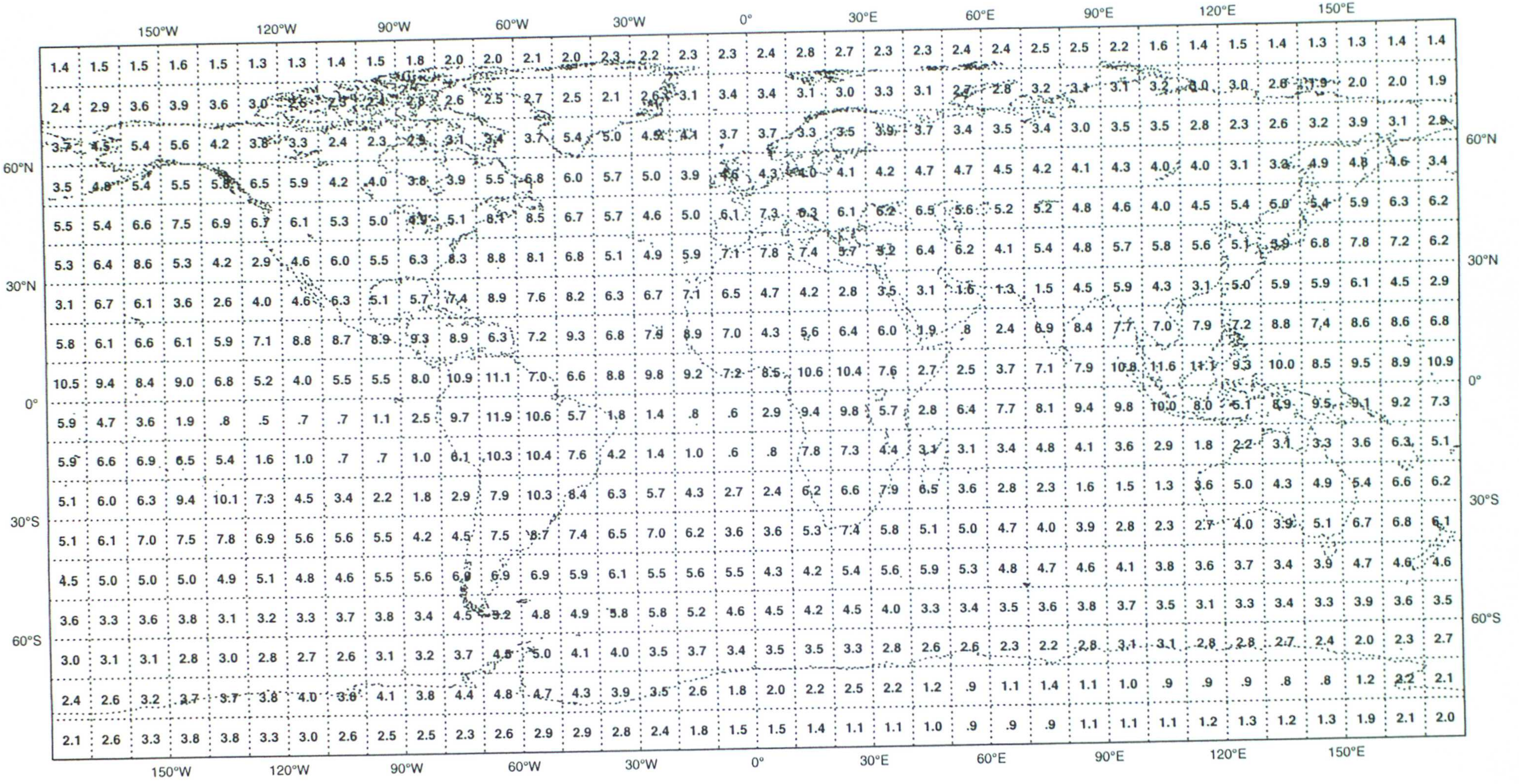
4.4	4.6	4.5	4.3	4.4	4.0	4.0	4.3	4.8	6.4	7.9	6.4	7.5	7.4	8.4	7.5	6.2	6.0	6.2	7.2	6.6	5.8	5.9	6.3	6.1	5.9	5.9	5.6	4.6	4.2	4.4	4.5	4.6	4.6	4.7	4.4
6.8	7.8	8.6	8.4	7.6	7.0	6.6	6.0	6.7	7.6	8.0	9.6	9.2	6.5	5.4	8.5	9.0	9.2	9.4	9.2	8.9	9.2	8.6	8.4	7.5	7.6	7.4	7.5	8.0	7.9	8.1	7.9	6.2	6.8	6.2	5.9
10.2	11.7	12.8	13.6	10.5	10.1	8.7	6.8	7.1	8.1	8.5	9.8	11.2	12.8	13.9	12.5	11.0	10.3	11.0	10.1	10.5	10.8	10.3	9.3	9.8	9.5	8.4	9.1	8.7	7.8	6.9	7.9	9.3	10.9	9.2	8.9
10.2	11.9	14.1	14.8	15.2	15.4	14.1	11.2	11.0	9.9	10.5	12.9	15.0	14.2	13.5	13.0	11.1	12.7	12.7	11.8	11.3	11.1	11.9	12.4	11.8	11.6	11.3	11.7	11.0	11.0	9.2	9.9	13.7	13.5	13.1	10.2
13.5	14.1	16.3	18.1	16.8	15.8	15.0	13.5	12.8	13.1	13.2	17.9	19.2	15.5	13.8	12.0	13.1	15.9	17.9	17.4	15.8	16.6	16.4	15.0	14.0	14.0	13.1	12.4	11.2	12.0	13.7	13.3	14.5	14.6	14.5	14.2
13.4	16.0	19.6	13.6	10.8	7.7	12.1	14.5	13.6	15.6	18.6	20.0	18.9	16.5	12.9	12.3	14.9	19.0	20.2	18.9	15.0	13.4	16.3	15.8	11.0	12.4	10.7	12.4	13.6	14.5	13.6	15.0	16.1	17.6	16.9	15.1
8.2	15.1	14.2	9.0	6.9	9.7	11.3	14.3	12.3	13.7	17.0	19.8	17.9	18.6	15.3	16.0	17.6	18.2	13.7	12.7	7.9	9.7	8.5	5.1	4.5	4.8	10.8	13.6	9.9	8.4	12.0	13.5	13.0	13.4	10.2	7.3
13.3	14.4	15.0	13.9	13.7	15.5	18.9	18.6	19.2	20.4	20.0	14.6	16.3	20.2	15.9	18.0	20.5	17.2	12.4	15.3	16.3	15.5	6.1	3.1	6.3	15.9	18.9	17.3	15.6	17.1	16.4	19.3	16.3	18.5	18.5	15.6
22.6	20.7	18.4	19.2	14.9	11.5	9.5	11.7	12.2	17.4	23.0	24.1	16.2	14.9	19.4	21.0	20.1	16.3	19.6	23.0	22.9	17.9	7.9	6.6	9.3	15.9	17.7	22.3	24.1	23.3	20.3	21.0	18.8	20.2	19.7	23.1
13.8	11.2	8.6	5.1	2.7	2.1	2.8	3.1	3.7	6.4	21.4	25.6	22.8	14.2	5.4	4.4	3.4	2.8	7.2	20.1	21.6	14.4	7.2	14.4	16.8	17.7	20.5	21.5	21.9	18.1	12.3	19.9	20.9	20.3	20.0	16.7
13.6	15.0	15.7	15.5	12.3	5.1	4.2	4.2	3.6	3.3	13.3	23.3	22.4	18.6	10.8	4.8	4.1	3.2	3.0	17.7	17.2	11.5	7.8	8.3	8.6	11.0	9.9	9.6	8.0	5.4	7.5	9.7	9.3	9.3	14.8	12.3
13.4	14.7	15.4	20.9	21.3	16.6	11.4	9.0	7.0	5.6	7.5	18.1	23.0	19.5	15.4	14.5	11.2	7.9	6.9	14.7	16.7	18.1	15.5	9.7	8.1	7.0	5.9	6.0	5.8	11.2	14.0	13.3	15.0	14.1	15.5	15.0
14.4	15.5	16.2	17.0	17.5	15.8	14.1	14.4	13.6	11.2	12.0	19.5	20.3	17.1	16.1	16.8	15.3	10.2	10.1	12.9	18.0	14.5	13.1	13.3	12.4	10.8	11.0	8.5	7.0	8.7	11.6	12.2	14.5	17.4	17.2	15.5
13.4	13.3	13.0	13.1	13.1	13.3	12.7	12.4	14.0	14.4	15.9	18.1	16.9	15.0	14.7	13.5	13.8	13.0	11.2	10.6	13.0	13.6	13.9	12.6	11.9	12.3	11.9	11.1	10.7	10.2	10.7	10.3	11.9	13.7	13.1	13.4
11.0	10.5	11.1	10.8	10.1	10.5	10.5	11.2	11.1	10.6	13.1	14.8	13.9	13.2	13.7	14.1	13.0	11.1	11.0	10.5	10.9	10.1	8.6	9.4	9.6	10.5	10.9	10.7	10.5	10.0	10.2	10.1	10.5	11.5	11.3	11.2
9.4	9.6	9.2	8.4	8.9	9.1	8.9	8.5	9.3	9.4	10.1	12.4	13.8	11.4	11.1	9.9	10.3	9.2	9.4	9.7	9.3	8.6	9.2	9.7	9.1	8.5	9.9	11.1	10.5	9.9	10.2	10.0	8.9	7.4	7.8	8.9
7.3	7.4	8.6	10.1	10.5	10.4	10.9	11.0	11.4	11.1	12.0	13.2	13.4	12.2	11.4	10.7	8.9	6.9	7.3	7.6	8.4	6.8	3.9	3.2	4.2	5.1	3.7	3.2	2.9	3.0	2.9	2.8	2.7	4.0	9.0	7.5
7.6	8.2	9.7	10.5	10.6	9.5	8.9	7.6	7.1	6.5	6.8	8.7	10.3	9.9	9.5	7.7	6.0	4.9	4.8	4.2	3.8	3.5	3.9	3.7	3.9	4.1	4.5	4.1	4.2	4.4	4.7	4.4	4.7	6.6	8.1	7.3

Figure 43. ATOVS MEAN O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS15 (700 hPa)
NOAA16, using all observations



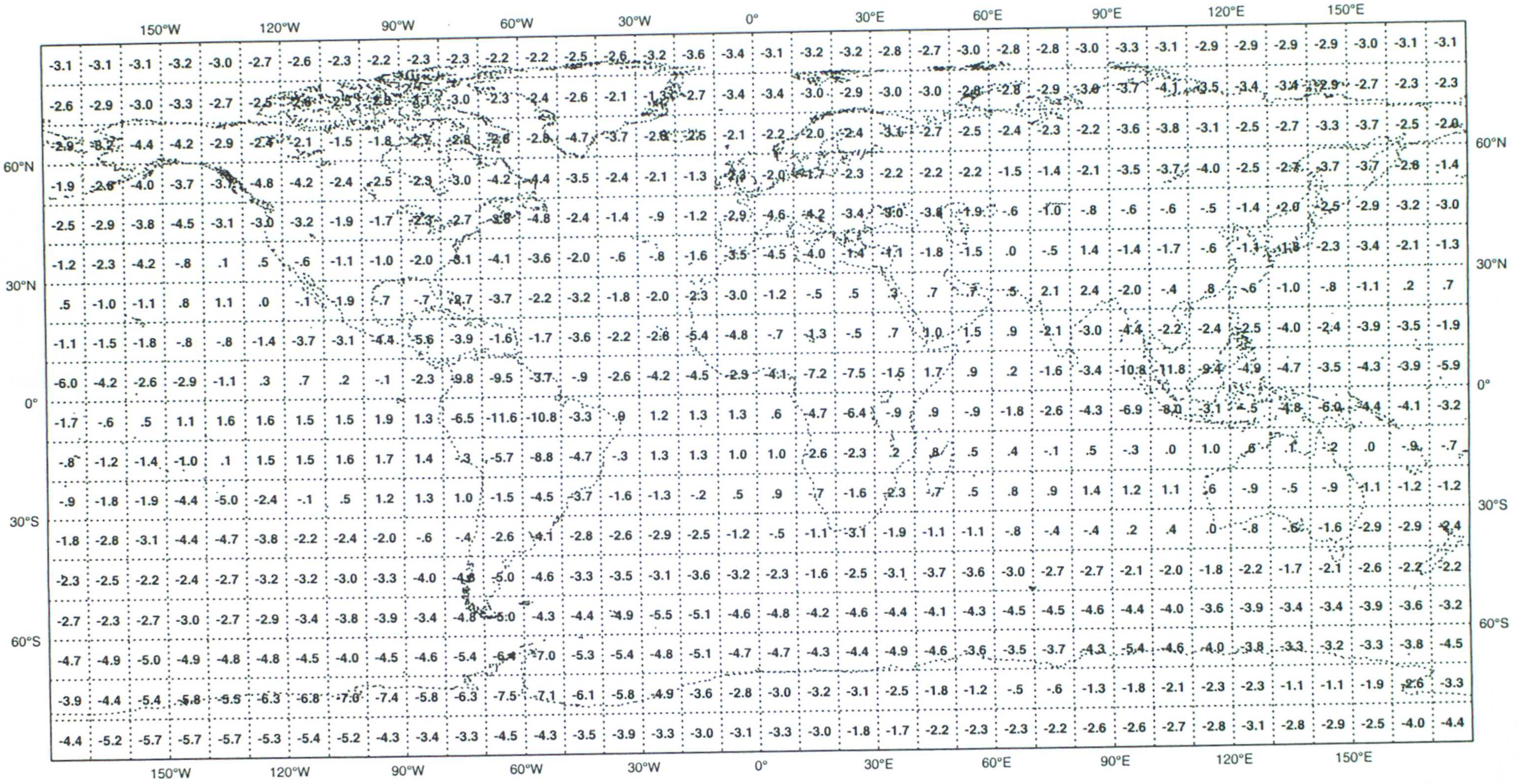
-1.9	-1.8	-1.8	-1.9	-1.8	-1.6	-1.4	-1.3	-1.2	-1.3	-1.1	-1.1	-1.0	-1.2	-1.2	-1.7	-2.2	-2.3	-2.2	-2.3	-2.1	-1.8	-1.6	-1.8	-1.6	-1.5	-1.7	-1.8	-1.7	-1.6	-1.6	-1.6	-1.6	-1.7	-1.8	-1.8
-1.8	-2.2	-2.4	-2.7	-2.3	-2.0	-1.6	-1.7	-2.0	-2.2	-2.1	-1.6	-1.2	-.9	-.6	-.4	-2.2	-3.2	-3.8	-3.2	-2.9	-3.0	-3.0	-2.6	-2.5	-2.4	-2.2	-2.5	-2.6	-2.1	-2.2	-2.2	-1.9	-1.8	-1.5	-1.6
-2.7	-3.2	-4.1	-3.5	-2.5	-2.1	-1.9	-1.3	-1.5	-2.4	-2.5	-2.6	-2.9	-3.6	-3.9	-3.2	-3.0	-3.1	-3.0	-2.1	-2.6	-3.5	-3.5	-3.2	-2.8	-2.6	-2.3	-2.8	-2.8	-2.1	-1.6	-1.5	-2.0	-2.6	-1.8	-1.6
-2.6	-3.4	-4.5	-4.6	[illegible]	-5.0	-4.4	-2.8	-2.7	-2.4	-3.1	-4.2	-5.1	-4.7	-3.9	-3.7	-2.9	-3.6	-3.1	-2.6	-3.4	-3.5	-3.7	-3.5	-2.7	-2.4	-2.8	-3.4	-3.6	-3.3	-2.3	-2.6	-4.0	-3.9	-3.1	-2.2
-4.2	-4.1	-4.9	-6.0	-4.8	-4.4	-3.6	-2.7	-2.5	-3.1	-3.5	-5.1	-6.0	-4.0	-3.4	-2.8	-3.1	-4.5	-5.6	-4.8	-4.4	-4.4	-4.9	-3.2	-2.1	-2.1	-1.4	-.6	-.8	-1.6	-2.7	-3.2	-3.5	-4.1	-4.9	-4.8
-3.4	-4.1	-6.2	-3.0	-1.7	-1.0	-1.2	-2.3	-2.5	-3.6	-6.0	-6.2	-5.4	-3.9	-2.6	-2.7	-3.4	-4.9	-6.0	-5.3	-2.5	-1.6	-2.4	-.7	-.2	-1.1	.5	-2.0	-3.5	-2.9	-2.4	-3.6	-4.8	-6.1	-4.8	-3.7
-1.2	-2.7	-3.2	-1.5	-1.0	-2.0	-2.0	-3.0	-2.2	-2.6	-3.8	-5.3	-3.8	-5.1	-3.5	-4.0	-4.4	-3.5	-1.0	-.8	-.5	-.6	-.2	.4	.4	.0	-.9	-4.3	-3.0	-1.4	-2.4	-2.7	-2.4	-2.5	-1.6	-1.0
-2.9	-3.2	-3.5	-2.7	-2.8	-3.5	-5.2	-4.4	-5.5	-6.3	-5.0	-2.9	-3.2	-5.0	-3.7	-4.4	-5.9	-3.9	-.6	-1.6	-1.4	-.6	.5	.0	-.5	-3.3	-4.2	-5.0	-3.5	-4.1	-3.9	-4.8	-3.6	-4.7	-4.4	-3.3
-7.2	-5.5	-4.4	-4.4	-2.9	-2.2	-1.9	-2.8	-2.8	-5.1	-10.6	-9.0	-4.3	-3.0	-4.9	-6.2	-6.0	-3.9	-5.4	-8.1	-8.8	-3.7	-.3	-.8	-1.4	-3.3	-5.3	-12.5	-12.7	-10.2	-6.3	-5.8	-4.8	-5.7	-5.0	-7.1
-2.8	-2.0	-1.3	-.6	-.3	-.2	-.4	-.6	-.8	-1.4	-7.9	-11.6	-9.8	-3.6	-.7	-.7	-.7	-.6	-1.3	-6.6	-7.8	-2.8	-1.0	-3.1	-3.7	-4.8	-6.6	-8.8	-9.0	-5.0	-2.2	-5.9	-7.1	-6.1	-5.4	-4.2
-2.8	-3.4	-3.6	-3.3	-2.1	-.7	-.6	-.6	-.9	-1.0	-1.8	-6.5	-10.4	-5.7	-1.9	-.7	-.8	-.7	-.5	-3.6	-3.7	-1.3	-.7	-1.4	-1.8	-2.3	-2.0	-2.1	-1.7	-.7	.1	-.9	-1.5	-1.6	-3.2	-2.5
-3.2	-3.9	-3.9	-6.6	-7.4	-4.5	-2.2	-1.6	-1.2	-1.0	-1.0	-2.4	-5.6	-5.4	-4.1	-3.6	-2.1	-1.2	-.9	-2.0	-2.4	-3.8	-2.7	-1.4	-1.1	-1.1	-.8	-1.0	-1.0	.1	-1.0	-.7	-1.4	-2.5	-3.2	-3.1
-3.4	-4.4	-4.6	-5.9	-6.5	-5.5	-3.9	-4.0	-3.7	-2.4	-2.0	-2.9	-4.8	-4.5	-4.4	-4.6	-4.2	-2.6	-2.5	-3.0	-4.7	-3.6	-2.8	-2.8	-2.6	-2.2	-2.1	-1.8	-1.4	-1.2	-1.6	-1.6	-2.0	-4.0	-4.1	-3.5
-3.3	-3.5	-2.9	-3.1	-3.4	-3.8	-3.7	-3.5	-3.8	-4.6	-5.8	-4.8	-5.1	-4.4	-4.2	-3.9	-4.4	-3.8	-3.1	-2.8	-3.5	-4.0	-4.3	-4.4	-4.0	-3.7	-3.8	-3.5	-3.0	-2.7	-3.0	-2.5	-2.7	-3.1	-2.8	-2.7
-2.8	-2.3	-2.4	-2.7	-2.3	-2.5	-2.9	-3.4	-3.8	-3.4	-4.5	-4.5	-4.0	-4.1	-4.5	-4.9	-4.8	-4.3	-4.4	-4.2	-4.3	-4.1	-3.8	-3.8	-3.9	-3.7	-3.8	-3.7	-3.4	-3.0	-3.3	-3.0	-2.8	-3.4	-3.2	-3.1
-2.9	-3.0	-3.1	-2.9	-3.1	-3.1	-3.0	-3.2	-3.7	-4.0	-4.5	-4.8	-5.1	-4.3	-4.2	-4.1	-4.4	-4.3	-4.2	-4.0	-3.9	-4.1	-3.7	-3.0	-2.9	-3.0	-3.3	-3.7	-3.1	-2.7	-2.5	-2.1	-1.9	-1.8	-2.2	-2.7
-2.6	-2.9	-3.5	-3.7	-3.6	-4.1	-4.6	-4.8	-4.8	-4.0	-4.2	-4.5	-4.7	-4.3	-4.0	-3.3	-2.6	-2.0	-2.3	-2.5	-2.6	-2.4	-2.1	-1.8	-1.5	-1.6	-1.8	-1.8	-1.9	-1.9	-1.7	-1.3	-1.2	-1.3	-1.8	-2.2
-2.8	-3.2	-3.5	-3.5	-3.5	-3.2	-3.3	-3.1	-2.5	-2.1	-2.1	-2.6	-2.6	-2.4	-2.7	-2.3	-2.1	-2.1	-2.2	-2.1	-1.8	-1.9	-2.2	-2.3	-2.2	-2.2	-2.3	-2.2	-2.2	-2.2	-2.2	-2.0	-2.0	-1.9	-2.7	-2.9

Figure 44. ATOVS SD O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS15 (700 hPa)
NOAA16, using all observations



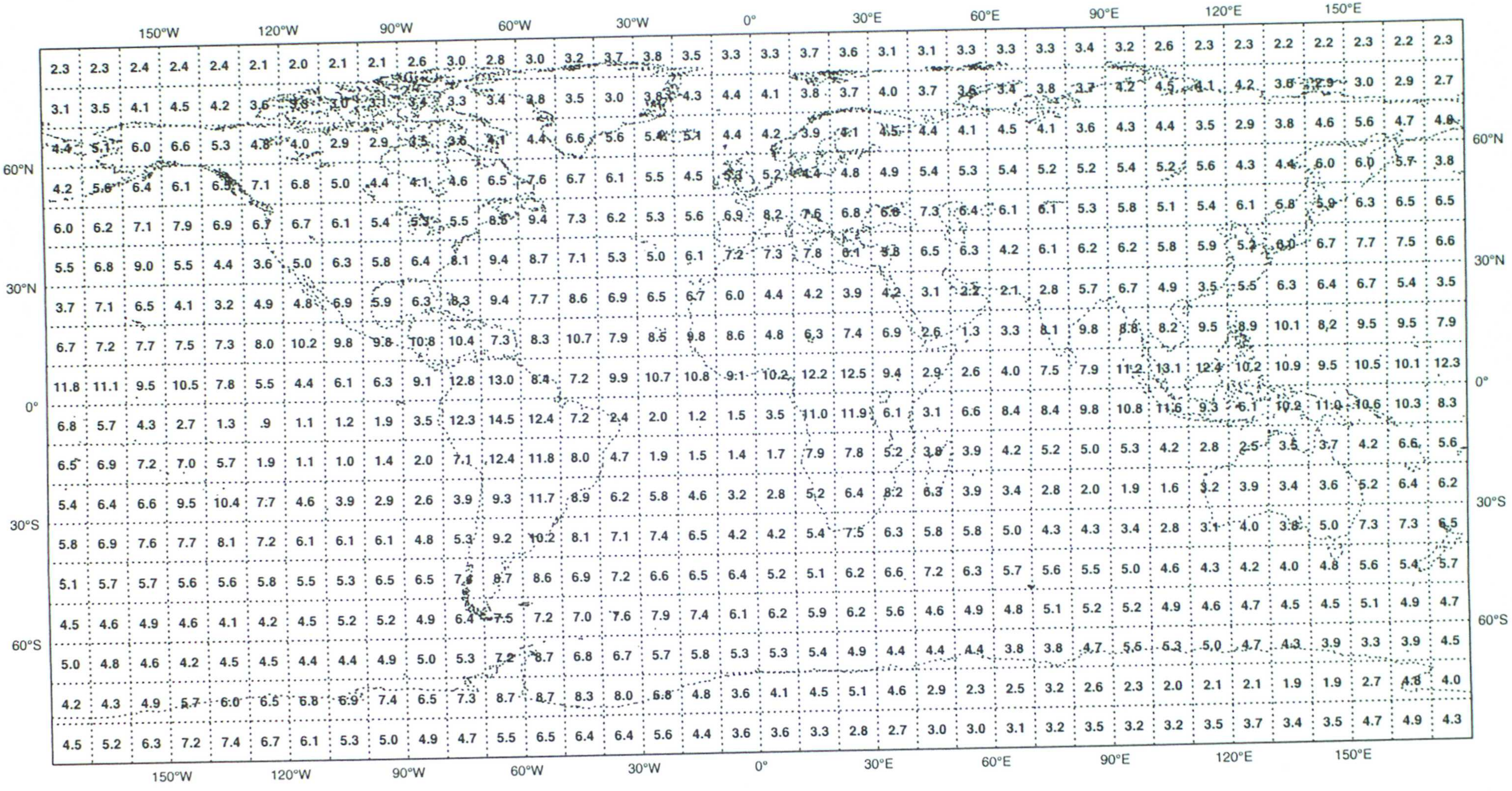
1.4	1.5	1.5	1.6	1.5	1.3	1.3	1.4	1.5	1.8	2.0	2.0	2.1	2.0	2.3	2.2	2.3	2.3	2.4	2.8	2.7	2.3	2.3	2.4	2.4	2.5	2.5	2.2	1.6	1.4	1.5	1.4	1.3	1.3	1.4	1.4
2.4	2.9	3.6	3.9	3.6	3.0	2.6	2.3	2.4	2.8	2.6	2.5	2.7	2.5	2.1	2.6	3.1	3.4	3.4	3.1	3.0	3.3	3.1	2.7	2.8	3.2	3.1	3.1	3.2	3.0	3.0	2.6	1.9	2.0	2.0	1.9
3.7	4.5	5.4	5.6	4.2	3.8	3.3	2.4	2.3	2.9	3.1	3.4	3.7	5.4	5.0	4.9	4.1	3.7	3.7	3.3	3.5	3.9	3.7	3.4	3.5	3.4	3.0	3.5	3.5	2.8	2.3	2.6	3.2	3.9	3.1	2.8
3.5	4.8	5.4	5.5	5.8	6.5	5.9	4.2	4.0	3.8	3.9	5.5	6.8	6.0	5.7	5.0	3.9	4.6	4.3	4.0	4.1	4.2	4.7	4.7	4.5	4.2	4.1	4.3	4.0	4.0	3.1	3.3	4.9	4.8	4.6	3.4
5.5	5.4	6.6	7.5	6.9	6.7	6.1	5.3	5.0	4.9	5.1	8.1	8.5	6.7	5.7	4.6	5.0	6.1	7.3	6.3	6.1	6.2	6.5	5.6	5.2	5.2	4.8	4.6	4.0	4.5	5.4	5.0	5.4	5.9	6.3	6.2
5.3	6.4	8.6	5.3	4.2	2.9	4.6	6.0	5.5	6.3	8.3	8.8	8.1	6.8	5.1	4.9	5.9	7.1	7.8	7.4	5.7	5.2	6.4	6.2	4.1	5.4	4.8	5.7	5.8	5.6	5.1	5.9	6.8	7.8	7.2	6.2
3.1	6.7	6.1	3.6	2.6	4.0	4.6	6.3	5.1	5.7	7.4	8.9	7.6	8.2	6.3	6.7	7.1	6.5	4.7	4.2	2.8	3.5	3.1	1.6	1.3	1.5	4.5	5.9	4.3	3.1	5.0	5.9	5.9	6.1	4.5	2.9
5.8	6.1	6.6	6.1	5.9	7.1	8.8	8.7	8.9	9.3	8.9	6.3	7.2	9.3	6.8	7.9	8.9	7.0	4.3	5.6	6.4	6.0	1.9	.8	2.4	6.9	8.4	7.7	7.0	7.9	7.2	8.8	7.4	8.6	8.6	6.8
10.5	9.4	8.4	9.0	6.8	5.2	4.0	5.5	5.5	8.0	10.9	11.1	7.0	6.6	8.8	9.8	9.2	7.2	8.5	10.6	10.4	7.6	2.7	2.5	3.7	7.1	7.9	10.8	11.6	11.1	9.3	10.0	8.5	9.5	8.9	10.9
5.9	4.7	3.6	1.9	.8	.5	.7	.7	1.1	2.5	9.7	11.9	10.6	5.7	1.8	1.4	.8	.6	2.9	9.4	9.8	5.7	2.8	6.4	7.7	8.1	9.4	9.8	10.0	8.0	5.1	8.9	9.5	9.1	9.2	7.3
5.9	6.6	6.9	6.5	5.4	1.6	1.0	.7	.7	1.0	6.1	10.3	10.4	7.6	4.2	1.4	1.0	.6	.8	7.8	7.3	4.4	3.1	3.1	3.4	4.8	4.1	3.6	2.9	1.8	2.2	3.1	3.3	3.6	6.3	5.1
5.1	6.0	6.3	9.4	10.1	7.3	4.5	3.4	2.2	1.8	2.9	7.9	10.3	8.4	6.3	5.7	4.3	2.7	2.4	6.2	6.6	7.9	6.5	3.6	2.8	2.3	1.6	1.5	1.3	3.6	5.0	4.3	4.9	5.4	6.6	6.2
5.1	6.1	7.0	7.5	7.8	6.9	5.6	5.6	5.5	4.2	4.5	7.5	8.7	7.4	6.5	7.0	6.2	3.6	3.6	5.3	7.4	5.8	5.1	5.0	4.7	4.0	3.9	2.8	2.3	2.7	4.0	3.9	5.1	6.7	6.8	6.1
4.5	5.0	5.0	5.0	4.9	5.1	4.8	4.6	5.5	5.6	6.9	6.9	6.9	5.9	6.1	5.5	5.6	5.5	4.3	4.2	5.4	5.6	5.9	5.3	4.8	4.7	4.6	4.1	3.8	3.6	3.7	3.4	3.9	4.7	4.6	4.6
3.6	3.3	3.6	3.8	3.1	3.2	3.3	3.7	3.8	3.4	4.5	5.2	4.8	4.9	5.8	5.8	5.2	4.6	4.5	4.2	4.5	4.0	3.3	3.4	3.5	3.6	3.8	3.7	3.5	3.1	3.3	3.4	3.3	3.9	3.6	3.5
3.0	3.1	3.1	2.8	3.0	2.8	2.7	2.6	3.1	3.2	3.7	4.8	5.0	4.1	4.0	3.5	3.7	3.4	3.5	3.5	3.3	2.8	2.6	2.6	2.3	2.2	2.8	3.1	3.1	2.8	2.8	2.7	2.4	2.0	2.3	2.7
2.4	2.6	3.2	3.7	3.7	3.8	4.0	3.6	4.1	3.8	4.4	4.8	4.7	4.3	3.9	3.5	2.6	1.8	2.0	2.2	2.5	2.2	1.2	.9	1.1	1.4	1.1	1.0	.9	.9	.9	.8	.8	1.2	2.2	2.1
2.1	2.6	3.3	3.8	3.8	3.3	3.0	2.6	2.5	2.5	2.3	2.6	2.9	2.9	2.8	2.4	1.8	1.5	1.5	1.4	1.1	1.1	1.0	.9	.9	.9	1.1	1.1	1.1	1.2	1.3	1.2	1.3	1.9	2.1	2.0

Figure 45. ATOVS MEAN O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS11 (500 - 700 hPa)
NOAA16, using all observations



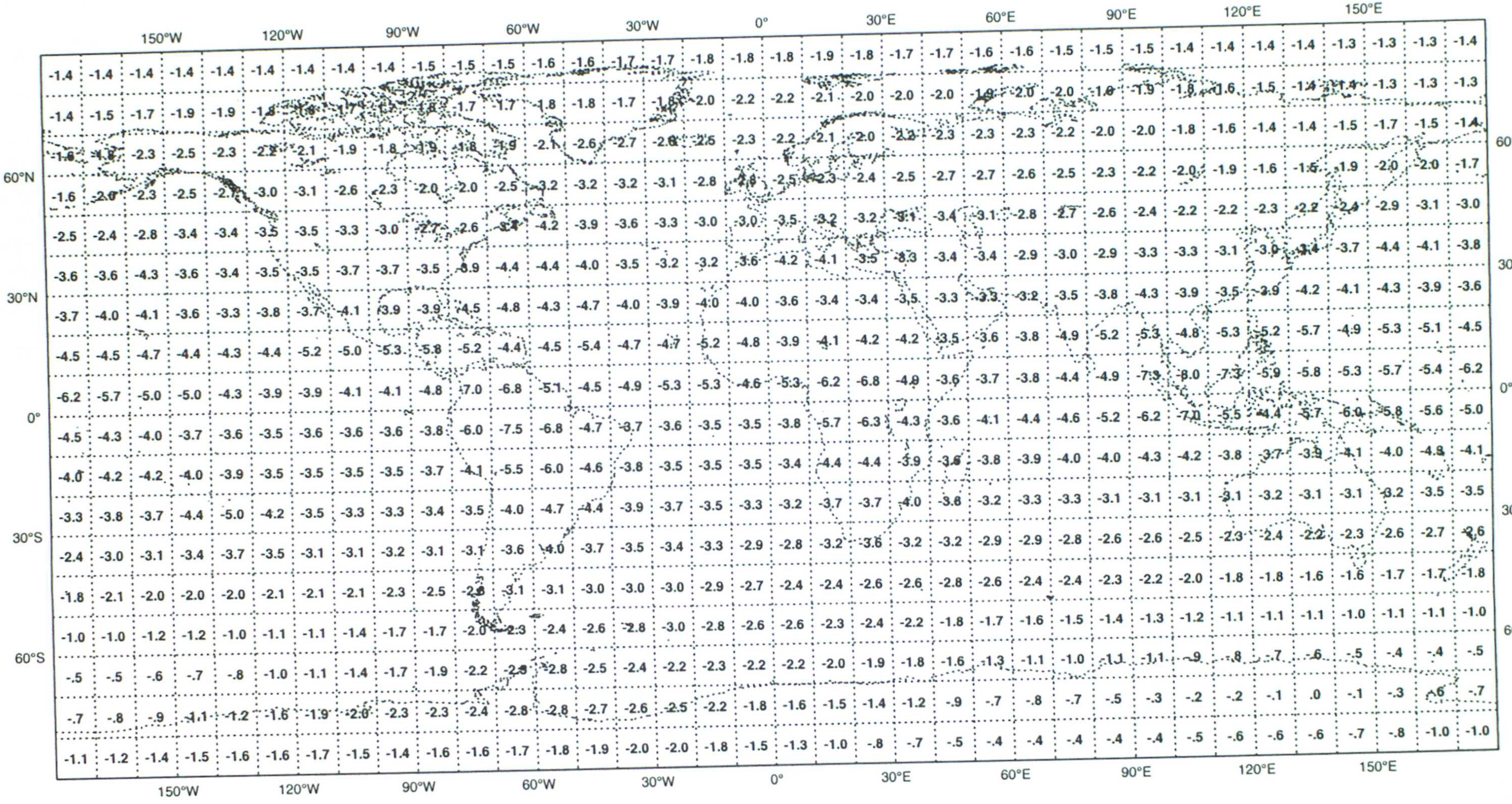
-3.1	-3.1	-3.1	-3.2	-3.0	-2.7	-2.6	-2.3	-2.2	-2.3	-2.3	-2.2	-2.2	-2.5	-2.6	-3.2	-3.6	-3.4	-3.1	-3.2	-3.2	-2.8	-2.7	-3.0	-2.8	-2.8	-3.0	-3.3	-3.1	-2.9	-2.9	-2.9	-2.9	-3.0	-3.1	-3.1
-2.6	-2.9	-3.0	-3.3	-2.7	-2.5	-2.6	-2.5	-2.8	-3.1	-3.0	-2.3	-2.4	-2.6	-2.1	-1.3	-2.7	-3.4	-3.4	-3.0	-2.9	-3.0	-3.0	-2.8	-2.8	-2.9	-3.0	-3.7	-4.1	-3.5	-3.4	-3.4	-2.9	-2.7	-2.3	-2.3
-2.9	-3.2	-4.4	-4.2	-2.9	-2.4	-2.1	-1.5	-1.8	-2.7	-2.8	-2.6	-2.8	-4.7	-3.7	-2.8	-2.5	-2.1	-2.2	-2.0	-2.4	-3.1	-2.7	-2.5	-2.4	-2.3	-2.2	-3.6	-3.8	-3.1	-2.5	-2.7	-3.3	-3.7	-2.5	-2.0
-1.9	-2.6	-4.0	-3.7	-3.7	-4.8	-4.2	-2.4	-2.5	-2.9	-3.0	-4.2	-4.4	-3.5	-2.4	-2.1	-1.3	-2.3	-2.0	-1.7	-2.3	-2.2	-2.2	-2.2	-1.5	-1.4	-2.1	-3.5	-3.7	-4.0	-2.5	-2.7	-3.7	-3.7	-2.8	-1.4
-2.5	-2.9	-3.8	-4.5	-3.1	-3.0	-3.2	-1.9	-1.7	-2.3	-2.7	-3.8	-4.8	-2.4	-1.4	-.9	-1.2	-2.9	-4.6	-4.2	-3.4	-3.0	-3.8	-1.9	-.6	-1.0	-.8	-.6	-.6	-.5	-1.4	-2.0	-2.5	-2.9	-3.2	-3.0
-1.2	-2.3	-4.2	-.8	.1	.5	-.6	-1.1	-1.0	-2.0	-3.1	-4.1	-3.6	-2.0	-.6	-.8	-1.6	-3.5	-4.5	-4.0	-1.4	-1.1	-1.8	-1.5	.0	-.5	1.4	-1.4	-1.7	-.6	-1.1	-1.8	-2.3	-3.4	-2.1	-1.3
.5	-1.0	-1.1	.8	1.1	.0	-.1	-1.9	-.7	-.7	-2.7	-3.7	-2.2	-3.2	-1.8	-2.0	-2.3	-3.0	-1.2	-.5	.5	.3	.7	.7	.5	2.1	2.4	-2.0	-.4	.8	-.6	-1.0	-.8	-1.1	.2	.7
-1.1	-1.5	-1.8	-.8	-.8	-1.4	-3.7	-3.1	-4.4	-5.6	-3.9	-1.6	-1.7	-3.6	-2.2	-2.8	-5.4	-4.8	-.7	-1.3	-.5	.7	1.0	1.5	.9	-2.1	-3.0	-4.4	-2.2	-2.4	-2.5	-4.0	-2.4	-3.9	-3.5	-1.9
-6.0	-4.2	-2.6	-2.9	-1.1	.3	.7	.2	-.1	-2.3	-9.8	-9.5	-3.7	-.9	-2.6	-4.2	-4.5	-2.9	-4.1	-7.2	-7.5	-1.5	1.7	.9	.2	-1.6	-3.4	-10.8	-11.8	-9.4	-4.9	-4.7	-3.5	-4.3	-3.9	-5.9
-1.7	-.6	.5	1.1	1.6	1.6	1.5	1.5	1.9	1.3	-6.5	-11.6	-10.8	-3.3	.9	1.2	1.3	1.3	.6	-4.7	-6.4	-.9	.9	-.9	-1.8	-2.6	-4.3	-6.9	-8.0	-3.1	-.5	-4.8	-6.0	-4.4	-4.1	-3.2
-.8	-1.2	-1.4	-1.0	.1	1.5	1.5	1.6	1.7	1.4	-.3	-5.7	-8.8	-4.7	-.3	1.3	1.3	1.0	1.0	-2.6	-2.3	.2	.8	.5	.4	-.1	.5	-.3	.0	1.0	.6	.1	-.2	.0	-.9	-.7
-.9	-1.8	-1.9	-4.4	-5.0	-2.4	-.1	.5	1.2	1.3	1.0	-1.5	-4.5	-3.7	-1.6	-1.3	-.2	.5	.9	-.7	-1.6	-2.3	-.7	.5	.8	.9	1.4	1.2	1.1	.6	-.9	-.5	-.9	-1.1	-1.2	-1.2
-1.8	-2.8	-3.1	-4.4	-4.7	-3.8	-2.2	-2.4	-2.0	-.6	-.4	-2.6	-4.1	-2.8	-2.6	-2.9	-2.5	-1.2	-.5	-1.1	-3.1	-1.9	-1.1	-1.1	-.8	-.4	-.4	.2	.4	.0	-.8	-.6	-1.6	-2.9	-2.9	-2.4
-2.3	-2.5	-2.2	-2.4	-2.7	-3.2	-3.2	-3.0	-3.3	-4.0	-4.8	-5.0	-4.6	-3.3	-3.5	-3.1	-3.6	-3.2	-2.3	-1.6	-2.5	-3.1	-3.7	-3.6	-3.0	-2.7	-2.7	-2.1	-2.0	-1.8	-2.2	-1.7	-2.1	-2.6	-2.2	-2.2
-2.7	-2.3	-2.7	-3.0	-2.7	-2.9	-3.4	-3.8	-3.9	-3.4	-4.8	-5.0	-4.3	-4.4	-4.9	-5.5	-5.1	-4.6	-4.8	-4.2	-4.6	-4.4	-4.1	-4.3	-4.5	-4.5	-4.6	-4.4	-4.0	-3.6	-3.9	-3.4	-3.4	-3.9	-3.6	-3.2
-4.7	-4.9	-5.0	-4.9	-4.8	-4.8	-4.5	-4.0	-4.5	-4.6	-5.4	-6.4	-7.0	-5.3	-5.4	-4.8	-5.1	-4.7	-4.7	-4.3	-4.4	-4.9	-4.6	-3.6	-3.5	-3.7	-4.3	-5.4	-4.6	-4.0	-3.8	-3.3	-3.2	-3.3	-3.8	-4.5
-3.9	-4.4	-5.4	-5.8	-5.5	-6.3	-6.8	-7.0	-7.4	-5.8	-6.3	-7.5	-7.1	-6.1	-5.8	-4.9	-3.6	-2.8	-3.0	-3.2	-3.1	-2.5	-1.8	-1.2	-.5	-.6	-1.3	-1.8	-2.1	-2.3	-2.3	-1.1	-1.1	-1.9	-2.6	-3.3
-4.4	-5.2	-5.7	-5.7	-5.7	-5.3	-5.4	-5.2	-4.3	-3.4	-3.3	-4.5	-4.3	-3.5	-3.9	-3.3	-3.0	-3.1	-3.3	-3.0	-1.8	-1.7	-2.2	-2.3	-2.3	-2.2	-2.6	-2.6	-2.7	-2.8	-3.1	-2.8	-2.9	-2.5	-4.0	-4.4

Figure 46. ATOVS SD O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS11 (500 - 700 hPa)
NOAA16, using all observations



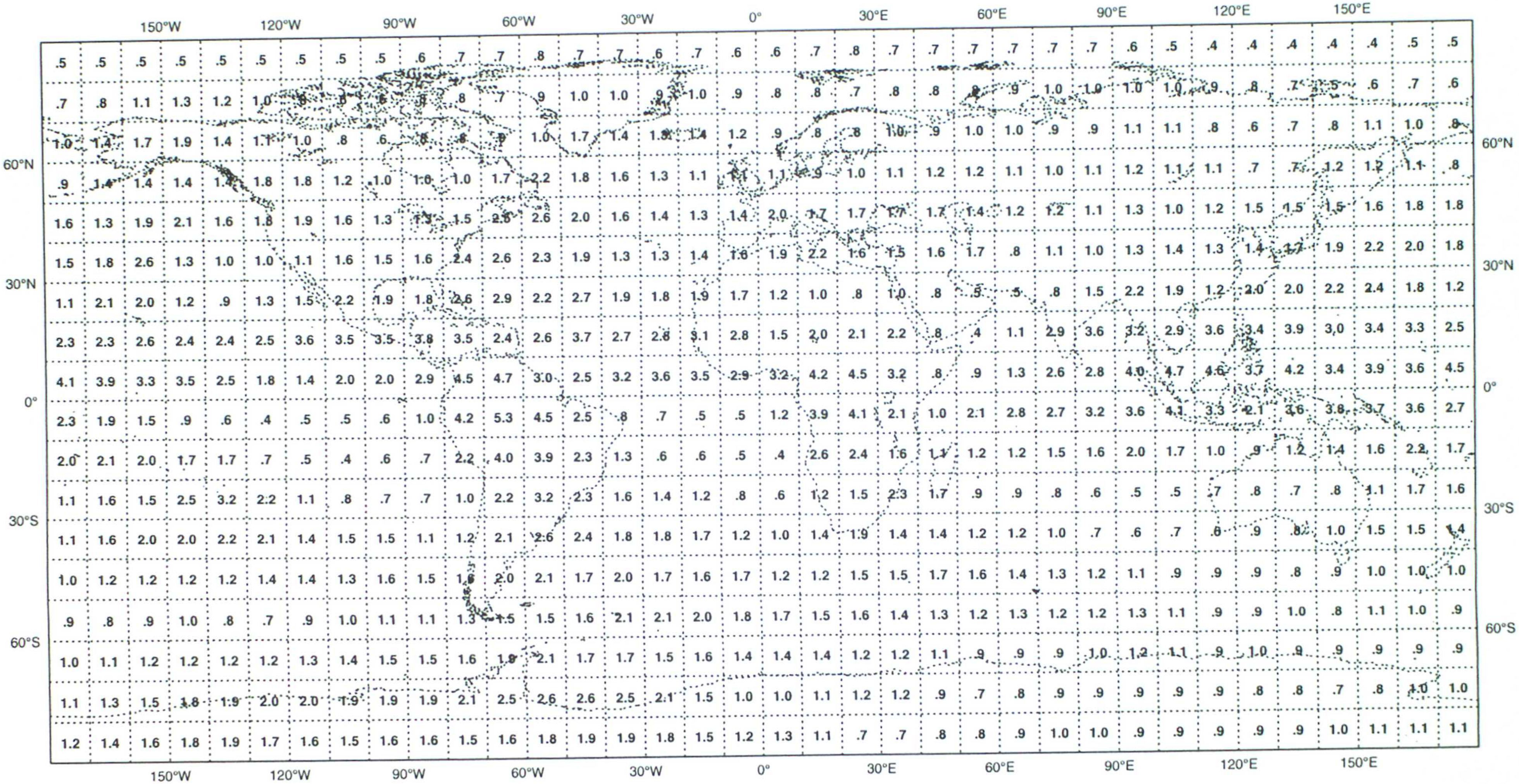
2.3	2.3	2.4	2.4	2.4	2.1	2.0	2.1	2.1	2.6	3.0	2.8	3.0	3.2	3.7	3.8	3.5	3.3	3.3	3.7	3.6	3.1	3.1	3.3	3.3	3.3	3.4	3.2	2.6	2.3	2.3	2.2	2.2	2.3	2.2	2.3
3.1	3.5	4.1	4.5	4.2	3.6	3.8	3.0	3.1	3.4	3.3	3.4	2.8	3.5	3.0	3.8	4.3	4.4	4.1	3.8	3.7	4.0	3.7	3.6	3.4	3.8	3.7	4.2	4.5	4.1	4.2	3.6	2.9	3.0	2.9	2.7
4.4	5.1	6.0	6.6	5.3	4.8	4.0	2.9	2.9	3.5	3.6	4.1	4.4	6.6	5.6	5.4	5.1	4.4	4.2	3.9	4.1	4.5	4.4	4.1	4.5	4.1	3.6	4.3	4.4	3.5	2.9	3.8	4.6	5.6	4.7	4.8
4.2	5.6	6.4	6.1	6.5	7.1	6.8	5.0	4.4	4.1	4.6	6.5	7.6	6.7	6.1	5.5	4.5	5.3	5.2	4.4	4.8	4.9	5.4	5.3	5.4	5.2	5.2	5.4	5.2	5.6	4.3	4.4	6.0	6.0	5.7	3.8
6.0	6.2	7.1	7.9	6.9	6.7	6.7	6.1	5.4	5.3	5.5	8.6	9.4	7.3	6.2	5.3	5.6	6.9	8.2	7.6	6.8	6.8	7.3	6.4	6.1	6.1	5.3	5.8	5.1	5.4	6.1	6.8	5.9	6.3	6.5	6.5
5.5	6.8	9.0	5.5	4.4	3.6	5.0	6.3	5.8	6.4	8.1	9.4	8.7	7.1	5.3	5.0	6.1	7.2	7.3	7.8	6.1	5.8	6.5	6.3	4.2	6.1	6.2	6.2	5.8	5.9	5.2	6.0	6.7	7.7	7.5	6.6
3.7	7.1	6.5	4.1	3.2	4.9	4.8	6.9	5.9	6.3	8.3	9.4	7.7	8.6	6.9	6.5	6.7	6.0	4.4	4.2	3.9	4.2	3.1	2.2	2.1	2.8	5.7	6.7	4.9	3.5	5.5	6.3	6.4	6.7	5.4	3.5
6.7	7.2	7.7	7.5	7.3	8.0	10.2	9.8	9.8	10.8	10.4	7.3	8.3	10.7	7.9	8.5	9.8	8.6	4.8	6.3	7.4	6.9	2.6	1.3	3.3	8.1	9.8	8.8	8.2	9.5	8.9	10.1	8.2	9.5	9.5	7.9
11.8	11.1	9.5	10.5	7.8	5.5	4.4	6.1	6.3	9.1	12.8	13.0	8.4	7.2	9.9	10.7	10.8	9.1	10.2	12.2	12.5	9.4	2.9	2.6	4.0	7.5	7.9	11.2	13.1	12.4	10.2	10.9	9.5	10.5	10.1	12.3
6.8	5.7	4.3	2.7	1.3	.9	1.1	1.2	1.9	3.5	12.3	14.5	12.4	7.2	2.4	2.0	1.2	1.5	3.5	11.0	11.9	6.1	3.1	6.6	8.4	8.4	9.8	10.8	11.6	9.3	6.1	10.2	11.0	10.6	10.3	8.3
6.5	6.9	7.2	7.0	5.7	1.9	1.1	1.0	1.4	2.0	7.1	12.4	11.8	8.0	4.7	1.9	1.5	1.4	1.7	7.9	7.8	5.2	3.8	3.9	4.2	5.2	5.0	5.3	4.2	2.8	2.5	3.5	3.7	4.2	6.6	5.6
5.4	6.4	6.6	9.5	10.4	7.7	4.6	3.9	2.9	2.6	3.9	9.3	11.7	8.9	6.2	5.8	4.6	3.2	2.8	5.2	6.4	8.2	6.3	3.9	3.4	2.8	2.0	1.9	1.6	3.2	3.9	3.4	3.6	5.2	6.4	6.2
5.8	6.9	7.6	7.7	8.1	7.2	6.1	6.1	6.1	4.8	5.3	9.2	10.2	8.1	7.1	7.4	6.5	4.2	4.2	5.4	7.5	6.3	5.8	5.8	5.0	4.3	4.3	3.4	2.8	3.1	4.0	3.8	5.0	7.3	7.3	6.5
5.1	5.7	5.7	5.6	5.6	5.8	5.5	5.3	6.5	6.5	7.6	8.7	8.6	6.9	7.2	6.6	6.5	6.4	5.2	5.1	6.2	6.6	7.2	6.3	5.7	5.6	5.5	5.0	4.6	4.3	4.2	4.0	4.8	5.6	5.4	5.7
4.5	4.6	4.9	4.6	4.1	4.2	4.5	5.2	5.2	4.9	6.4	7.5	7.2	7.0	7.6	7.9	7.4	6.1	6.2	5.9	6.2	5.6	4.6	4.9	4.8	5.1	5.2	5.2	4.9	4.6	4.7	4.5	4.5	5.1	4.9	4.7
5.0	4.8	4.6	4.2	4.5	4.5	4.4	4.4	4.9	5.0	5.3	7.2	8.7	6.8	6.7	5.7	5.8	5.3	5.3	5.4	4.9	4.4	4.4	4.4	3.8	3.8	4.7	5.6	5.3	5.0	4.7	4.3	3.9	3.3	3.9	4.5
4.2	4.3	4.9	5.7	6.0	6.5	6.8	6.9	7.4	6.5	7.3	8.7	8.7	8.3	8.0	6.8	4.8	3.6	4.1	4.5	5.1	4.6	2.9	2.3	2.5	3.2	2.6	2.3	2.0	2.1	2.1	1.9	1.9	2.7	4.8	4.0
4.5	5.2	6.3	7.2	7.4	6.7	6.1	5.3	5.0	4.9	4.7	5.5	6.5	6.4	6.4	5.6	4.4	3.6	3.6	3.3	2.8	2.7	3.0	3.0	3.1	3.2	3.5	3.2	3.2	3.5	3.7	3.4	3.5	4.7	4.9	4.3

Figure 47. ATOVS MEAN O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS4 (400 hPa)
NOAA16, using all observations



-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.5	-1.5	-1.5	-1.6	-1.6	-1.7	-1.7	-1.8	-1.8	-1.8	-1.9	-1.8	-1.7	-1.7	-1.6	-1.6	-1.5	-1.5	-1.5	-1.4	-1.4	-1.4	-1.4	-1.3	-1.3	-1.3	-1.4
-1.4	-1.5	-1.7	-1.9	-1.9	-1.8	-1.8	-1.7	-1.7	-1.8	-1.7	-1.7	-1.8	-1.8	-1.7	-1.8	-2.0	-2.2	-2.2	-2.1	-2.0	-2.0	-2.0	-1.9	-2.0	-2.0	-1.8	-1.9	-1.8	-1.6	-1.5	-1.4	-1.4	-1.3	-1.3	-1.3
-1.6	-1.8	-2.3	-2.5	-2.3	-2.2	-2.1	-1.9	-1.8	-1.9	-1.8	-1.9	-2.1	-2.6	-2.7	-2.8	-2.5	-2.3	-2.2	-2.1	-2.0	-2.3	-2.3	-2.3	-2.3	-2.2	-2.0	-2.0	-1.8	-1.6	-1.4	-1.4	-1.5	-1.7	-1.5	-1.4
-1.6	-2.0	-2.3	-2.5	-2.7	-3.0	-3.1	-2.6	-2.3	-2.0	-2.0	-2.5	-3.2	-3.2	-3.2	-3.1	-2.8	-2.8	-2.5	-2.3	-2.4	-2.5	-2.7	-2.7	-2.6	-2.5	-2.3	-2.2	-2.0	-1.9	-1.6	-1.5	-1.9	-2.0	-2.0	-1.7
-2.5	-2.4	-2.8	-3.4	-3.4	-3.5	-3.5	-3.3	-3.0	-2.7	-2.6	-3.4	-4.2	-3.9	-3.6	-3.3	-3.0	-3.0	-3.5	-3.2	-3.2	-3.1	-3.4	-3.1	-2.8	-2.7	-2.6	-2.4	-2.2	-2.2	-2.3	-2.2	-2.4	-2.9	-3.1	-3.0
-3.6	-3.6	-4.3	-3.6	-3.4	-3.5	-3.5	-3.7	-3.7	-3.5	-3.9	-4.4	-4.4	-4.0	-3.5	-3.2	-3.2	-3.6	-4.2	-4.1	-3.5	-3.3	-3.4	-3.4	-2.9	-3.0	-2.9	-3.3	-3.3	-3.1	-3.0	-3.4	-3.7	-4.4	-4.1	-3.8
-3.7	-4.0	-4.1	-3.6	-3.3	-3.8	-3.7	-4.1	-3.9	-3.9	-4.5	-4.8	-4.3	-4.7	-4.0	-3.9	-4.0	-4.0	-3.6	-3.4	-3.4	-3.5	-3.3	-3.3	-3.2	-3.5	-3.8	-4.3	-3.9	-3.5	-3.9	-4.2	-4.1	-4.3	-3.9	-3.6
-4.5	-4.5	-4.7	-4.4	-4.3	-4.4	-5.2	-5.0	-5.3	-5.8	-5.2	-4.4	-4.5	-5.4	-4.7	-4.7	-5.2	-4.8	-3.9	-4.1	-4.2	-4.2	-3.5	-3.6	-3.8	-4.9	-5.2	-5.3	-4.8	-5.3	-5.2	-5.7	-4.9	-5.3	-5.1	-4.5
-6.2	-5.7	-5.0	-5.0	-4.3	-3.9	-3.9	-4.1	-4.1	-4.8	-7.0	-6.8	-5.1	-4.5	-4.9	-5.3	-5.3	-4.6	-5.3	-6.2	-6.8	-4.9	-3.6	-3.7	-3.8	-4.4	-4.9	-7.3	-8.0	-7.3	-5.9	-5.8	-5.3	-5.7	-5.4	-6.2
-4.5	-4.3	-4.0	-3.7	-3.6	-3.5	-3.6	-3.6	-3.6	-3.8	-6.0	-7.5	-6.8	-4.7	-3.7	-3.6	-3.5	-3.5	-3.8	-5.7	-6.3	-4.3	-3.6	-4.1	-4.4	-4.6	-5.2	-6.2	-7.0	-5.5	-4.4	-5.7	-6.0	-5.8	-5.6	-5.0
-4.0	-4.2	-4.2	-4.0	-3.9	-3.5	-3.5	-3.5	-3.5	-3.7	-4.1	-5.5	-6.0	-4.6	-3.8	-3.5	-3.5	-3.5	-3.4	-4.4	-4.4	-3.9	-3.6	-3.8	-3.9	-4.0	-4.0	-4.3	-4.2	-3.8	-3.7	-3.9	-4.1	-4.0	-4.8	-4.1
-3.3	-3.8	-3.7	-4.4	-5.0	-4.2	-3.5	-3.3	-3.3	-3.4	-3.5	-4.0	-4.7	-4.4	-3.9	-3.7	-3.5	-3.3	-3.2	-3.7	-3.7	-4.0	-3.8	-3.2	-3.3	-3.3	-3.1	-3.1	-3.1	-3.1	-3.2	-3.1	-3.1	-3.2	-3.5	-3.5
-2.4	-3.0	-3.1	-3.4	-3.7	-3.5	-3.1	-3.1	-3.2	-3.1	-3.1	-3.6	-4.0	-3.7	-3.5	-3.4	-3.3	-2.9	-2.8	-3.2	-3.6	-3.2	-3.2	-2.9	-2.9	-2.8	-2.6	-2.6	-2.5	-2.3	-2.4	-2.2	-2.3	-2.6	-2.7	-2.6
-1.8	-2.1	-2.0	-2.0	-2.0	-2.1	-2.1	-2.1	-2.3	-2.5	-2.8	-3.1	-3.1	-3.0	-3.0	-3.0	-2.9	-2.7	-2.4	-2.4	-2.6	-2.6	-2.8	-2.6	-2.4	-2.4	-2.3	-2.2	-2.0	-1.8	-1.8	-1.6	-1.6	-1.7	-1.7	-1.8
-1.0	-1.0	-1.2	-1.2	-1.0	-1.1	-1.1	-1.4	-1.7	-1.7	-2.0	-2.3	-2.4	-2.6	-2.8	-3.0	-2.8	-2.6	-2.6	-2.3	-2.4	-2.2	-1.8	-1.7	-1.6	-1.5	-1.4	-1.3	-1.2	-1.1	-1.1	-1.1	-1.0	-1.1	-1.1	-1.0
-.5	-.5	-.6	-.7	-.8	-1.0	-1.1	-1.4	-1.7	-1.9	-2.2	-2.3	-2.8	-2.5	-2.4	-2.2	-2.3	-2.2	-2.2	-2.0	-1.9	-1.8	-1.6	-1.3	-1.1	-1.0	-1.1	-1.1	-.9	-.8	-.7	-.6	-.5	-.4	-.4	-.5
-.7	-.8	-.9	-1.1	-1.2	-1.6	-1.9	-2.0	-2.3	-2.3	-2.4	-2.8	-2.8	-2.7	-2.6	-2.5	-2.2	-1.8	-1.6	-1.5	-1.4	-1.2	-.9	-.7	-.8	-.7	-.5	-.3	-.2	-.2	-.1	.0	-.1	-.3	-.6	-.7
-1.1	-1.2	-1.4	-1.5	-1.6	-1.6	-1.7	-1.5	-1.4	-1.6	-1.6	-1.7	-1.8	-1.9	-2.0	-2.0	-1.8	-1.5	-1.3	-1.0	-.8	-.7	-.5	-.4	-.4	-.4	-.4	-.4	-.5	-.6	-.6	-.6	-.7	-.8	-1.0	-1.0

Figure 48. ATOVS SD O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS4 (400 hPa)
NOAA16, using all observations



.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.7	.7	.8	.7	.7	.6	.7	.6	.6	.7	.8	.7	.7	.7	.7	.7	.7	.6	.5	.4	.4	.4	.4	.4	.5	.5
.7	.8	1.1	1.3	1.2	1.0	.8	.8	.6	.8	.8	.7	.9	1.0	1.0	.9	1.0	.9	.8	.8	.7	.8	.8	.8	.9	1.0	1.0	1.0	1.0	.9	.8	.7	.5	.6	.7	.6
1.0	1.4	1.7	1.9	1.4	1.1	1.0	.8	.6	.8	.8	.9	1.0	1.7	1.4	1.8	1.4	1.2	.9	.8	.8	1.0	.9	1.0	1.0	.9	.9	1.1	1.1	.8	.6	.7	.8	1.1	1.0	.8
.9	1.4	1.4	1.4	1.4	1.8	1.8	1.2	1.0	1.0	1.0	1.7	2.2	1.8	1.6	1.3	1.1	1.1	1.1	.9	1.0	1.1	1.2	1.2	1.1	1.0	1.1	1.2	1.1	1.1	.7	.7	1.2	1.2	1.1	.8
1.6	1.3	1.9	2.1	1.6	1.8	1.9	1.6	1.3	1.3	1.5	2.5	2.6	2.0	1.6	1.4	1.3	1.4	2.0	1.7	1.7	1.7	1.7	1.4	1.2	1.2	1.1	1.3	1.0	1.2	1.5	1.5	1.5	1.6	1.8	1.8
1.5	1.8	2.6	1.3	1.0	1.0	1.1	1.6	1.5	1.6	2.4	2.6	2.3	1.9	1.3	1.3	1.4	1.6	1.9	2.2	1.6	1.5	1.6	1.7	.8	1.1	1.0	1.3	1.4	1.3	1.4	1.7	1.9	2.2	2.0	1.8
1.1	2.1	2.0	1.2	.9	1.3	1.5	2.2	1.9	1.8	2.6	2.9	2.2	2.7	1.9	1.8	1.9	1.7	1.2	1.0	.8	1.0	.8	.5	.5	.8	1.5	2.2	1.9	1.2	2.0	2.0	2.2	2.4	1.8	1.2
2.3	2.3	2.6	2.4	2.4	2.5	3.6	3.5	3.5	3.8	3.5	2.4	2.6	3.7	2.7	2.8	3.1	2.8	1.5	2.0	2.1	2.2	.8	.4	1.1	2.9	3.6	3.2	2.9	3.6	3.4	3.9	3.0	3.4	3.3	2.5
4.1	3.9	3.3	3.5	2.5	1.8	1.4	2.0	2.0	2.9	4.5	4.7	3.0	2.5	3.2	3.6	3.5	2.9	3.2	4.2	4.5	3.2	.8	.9	1.3	2.6	2.8	4.0	4.7	4.6	3.7	4.2	3.4	3.9	3.6	4.5
2.3	1.9	1.5	.9	.6	.4	.5	.5	.6	1.0	4.2	5.3	4.5	2.5	.8	.7	.5	.5	1.2	3.9	4.1	2.1	1.0	2.1	2.8	2.7	3.2	3.6	4.1	3.3	2.1	3.6	3.8	3.7	3.6	2.7
2.0	2.1	2.0	1.7	1.7	.7	.5	.4	.6	.7	2.2	4.0	3.9	2.3	1.3	.6	.6	.5	.4	2.6	2.4	1.6	1.1	1.2	1.2	1.5	1.6	2.0	1.7	1.0	.9	1.2	1.4	1.6	2.2	1.7
1.1	1.6	1.5	2.5	3.2	2.2	1.1	.8	.7	.7	1.0	2.2	3.2	2.3	1.6	1.4	1.2	.8	.6	1.2	1.5	2.3	1.7	.9	.9	.8	.6	.5	.5	.7	.8	.7	.8	1.1	1.7	1.6
1.1	1.6	2.0	2.0	2.2	2.1	1.4	1.5	1.5	1.1	1.2	2.1	2.6	2.4	1.8	1.8	1.7	1.2	1.0	1.4	1.9	1.4	1.4	1.2	1.2	1.0	.7	.6	.7	.6	.9	.8	1.0	1.5	1.5	1.4
1.0	1.2	1.2	1.2	1.2	1.4	1.4	1.3	1.6	1.5	1.6	2.0	2.1	1.7	2.0	1.7	1.6	1.7	1.2	1.2	1.5	1.5	1.7	1.6	1.4	1.3	1.2	1.1	.9	.9	.9	.8	.9	1.0	1.0	1.0
.9	.8	.9	1.0	.8	.7	.9	1.0	1.1	1.1	1.3	1.5	1.5	1.6	2.1	2.1	2.0	1.8	1.7	1.5	1.6	1.4	1.3	1.2	1.3	1.2	1.2	1.3	1.1	.9	.9	1.0	.8	1.1	1.0	.9
1.0	1.1	1.2	1.2	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.9	2.1	1.7	1.7	1.5	1.6	1.4	1.4	1.4	1.2	1.2	1.1	.9	.9	.9	1.0	1.2	1.1	.9	1.0	.9	.9	.9	.9	.9
1.1	1.3	1.5	1.8	1.9	2.0	2.0	1.9	1.9	1.9	2.1	2.5	2.6	2.6	2.5	2.1	1.5	1.0	1.0	1.1	1.2	1.2	.9	.7	.8	.9	.9	.9	.9	.9	.8	.8	.7	.8	1.0	1.0
1.2	1.4	1.6	1.8	1.9	1.7	1.6	1.5	1.6	1.6	1.5	1.6	1.8	1.9	1.9	1.8	1.5	1.2	1.3	1.1	.7	.7	.8	.8	.9	1.0	1.0	.9	.9	.9	.9	.9	1.0	1.1	1.1	1.1

Figure 49. ATOVS MEAN O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: AMSUA-5 (700 hPa)
NOAA16, using all observations

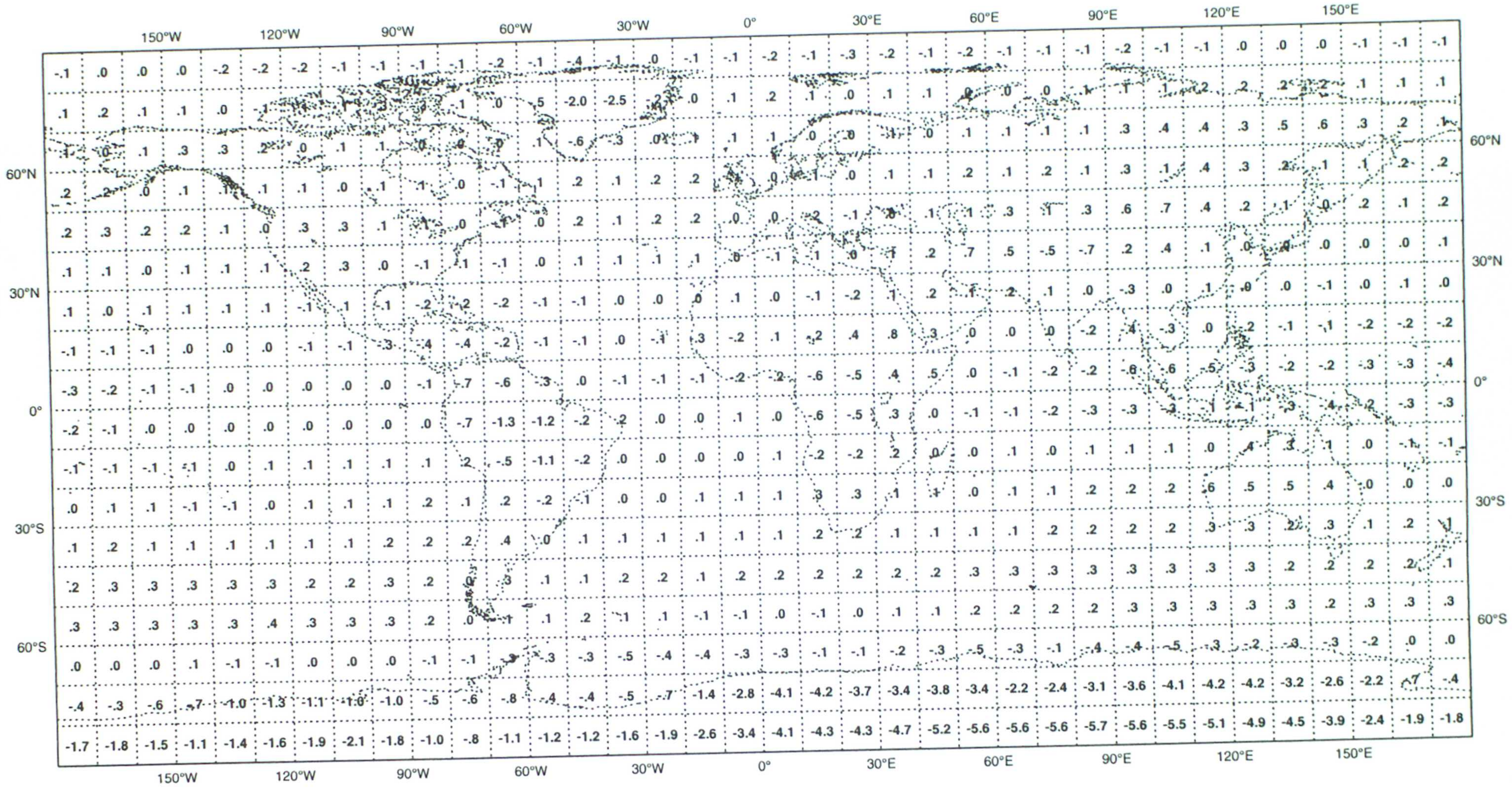
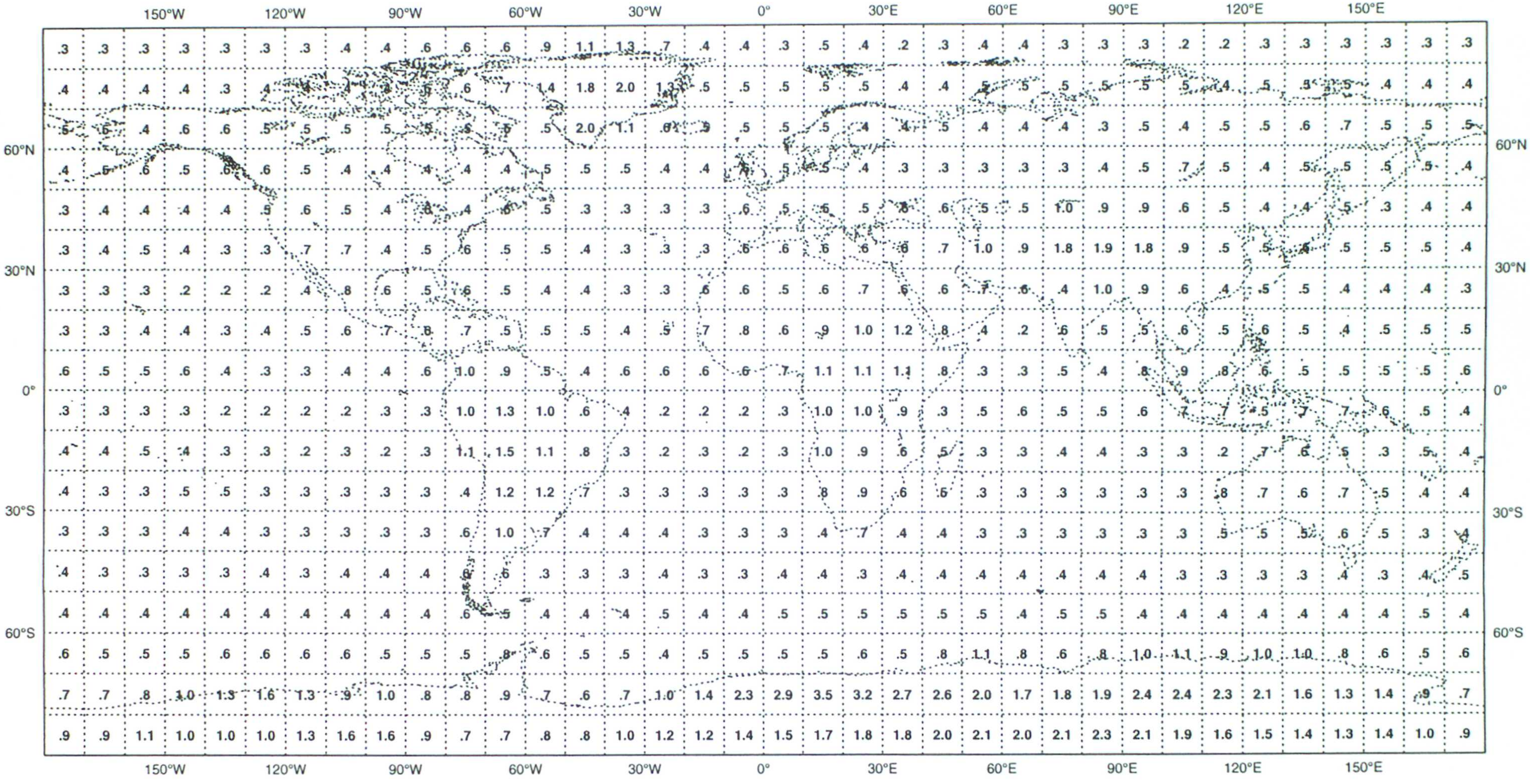

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
-.1 .0 .0 .0 -.2 -.2 -.2 -.1 -.1 -.1 -.1 -.2 -.1 -.4 -.1 .0 -.1 -.1 -.2 -.1 -.3 -.2 -.1 -.2 -.1 -.1 -.1 -.2 -.1 -.1 .0 .0 .0 -.1 -.1 -.1
.1 .2 .1 .1 .0 -.1 [illegible] .1 .3 .3 -.1 .0 .5 -2.0 -2.5 -.2 .0 .1 .2 .1 .0 .1 .1 .0 .0 .0 .1 .1 .1 .2 .2 .2 .2 .1 .1 .1
-.1 .0 .1 .3 .3 .2 .0 .1 .1 .0 .0 .0 .1 -.6 -.3 .0 .1 .1 .1 .0 .0 -.1 .0 .1 .1 .1 .1 .3 .4 .4 .3 .5 .6 .3 .2 .1
.2 .2 .0 .1 .1 .1 .1 .0 .1 .1 .0 -.1 .1 .2 .1 .2 .2 [illegible] .0 -.1 .0 .1 .1 .2 .1 .2 .1 .3 .1 .4 .3 .2 .1 .1 .2 .2
.2 .3 .2 .2 .1 .0 .3 .3 .1 -.1 .0 -.1 .0 .2 .1 .2 .2 .0 .0 -.2 -.1 .0 .1 .1 .3 .1 .3 .6 .7 .4 .2 .1 .0 .2 .1 .2
.1 .1 .0 .1 .1 .1 .2 .3 .0 -.1 .1 -.1 .0 .1 .1 .1 .1 .0 -.1 -.1 .0 .1 .2 .7 .5 -.5 -.7 .2 .4 .1 .0 .0 .0 .0 .0 .1
.1 .0 .1 .1 .1 .1 -.1 .1 -.1 -.2 -.2 -.2 -.1 -.1 .0 .0 .0 .1 .0 -.1 -.2 .1 .2 .1 .2 .1 .0 -.3 .0 .1 .0 .0 -.1 .0 .1 .0
-.1 -.1 -.1 .0 .0 .0 -.1 -.1 -.3 -.4 -.4 -.2 -.1 -.1 .0 -.1 .3 -.2 .1 -.2 .4 .8 .3 .0 .0 .0 -.2 -.4 -.3 .0 -.2 -.1 -.1 -.2 -.2 -.2
-.3 -.2 -.1 -.1 .0 .0 .0 .0 .0 -.1 -.7 -.6 -.3 .0 -.1 -.1 -.1 -.2 -.2 -.6 -.5 .4 .5 .0 -.1 -.2 -.2 -.6 -.6 -.5 -.3 -.2 -.2 -.3 -.3 -.4
-.2 -.1 .0 .0 .0 .0 .0 .0 .0 .0 -.7 -1.3 -1.2 -.2 .2 .0 .0 .1 .0 -.6 -.5 .3 .0 -.1 -.1 -.2 -.3 -.3 -.3 -.1 -.1 -.3 -.4 -.2 -.3 -.3
-.1 -.1 -.1 -.1 .0 .1 .1 .1 .1 .1 .2 -.5 -1.1 -.2 .0 .0 .0 .0 .1 -.2 -.2 .2 .0 .0 .1 .0 .1 .1 .1 .0 .4 .3 .1 .0 -.1 -.1
.0 .1 .1 -.1 -.1 .0 .1 .1 .1 .2 .1 .2 -.2 -.1 .0 .0 .1 .1 .1 .3 .3 .1 .1 .0 .1 .1 .2 .2 .2 .6 .5 .5 .4 .0 .0 .0
.1 .2 .1 .1 .1 .1 .1 .1 .2 .2 .2 .4 .0 .1 .1 .1 .1 .1 .1 .2 .2 .1 .1 .1 .1 .2 .2 .2 .2 .3 .3 .2 .3 .1 .2 .1
.2 .3 .3 .3 .3 .3 .2 .2 .3 .2 .0 .3 .1 .1 .2 .2 .1 .2 .2 .2 .2 .2 .2 .3 .3 .3 .3 .3 .3 .3 .3 .2 .2 .2 .2 .1
.3 .3 .3 .3 .3 .4 .3 .3 .3 .2 .0 .1 .1 .2 .1 .1 -.1 -.1 .0 -.1 .0 .1 .1 .2 .2 .2 .2 .3 .3 .3 .3 .3 .2 .3 .3 .3
.0 .0 .0 .1 -.1 -.1 .0 .0 .0 -.1 -.1 -.3 -.3 -.3 -.5 -.4 -.4 -.3 -.3 -.1 -.1 -.2 -.3 -.5 -.3 -.1 -.4 -.4 -.5 -.3 -.2 -.3 -.3 -.2 .0 .0
-.4 -.3 -.6 -.7 -1.0 -1.3 -1.1 -1.0 -1.0 -.5 -.6 -.8 -.4 -.4 -.5 -.7 -1.4 -2.8 -4.1 -4.2 -3.7 -3.4 -3.8 -3.4 -2.2 -2.4 -3.1 -3.6 -4.1 -4.2 -4.2 -3.2 -2.6 -2.2 -.7 -.4
-1.7 -1.8 -1.5 -1.1 -1.4 -1.6 -1.9 -2.1 -1.8 -1.0 -.8 -1.1 -1.2 -1.2 -1.6 -1.9 -2.6 -3.4 -4.1 -4.3 -4.3 -4.7 -5.2 -5.6 -5.6 -5.6 -5.7 -5.6 -5.5 -5.1 -4.9 -4.5 -3.9 -2.4 -1.9 -1.8
60°N 30°N 0° 30°S 60°S
150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E

Figure 50. ATOVS SD O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: AMSUA-5 (700 hPa)
NOAA16, using all observations



.3	.3	.3	.3	.3	.3	.3	.4	.4	.6	.6	.6	.9	1.1	1.3	.7	.4	.4	.3	.5	.4	.2	.3	.4	.4	.3	.3	.3	.2	.2	.3	.3	.3	.3	.3	.3
.4	.4	.4	.4	.3	.4	.4	.4	.4	.5	.6	.7	1.4	1.8	2.0	1.3	.5	.5	.5	.5	.5	.4	.4	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.4	.4	.4
.5	.5	.4	.6	.6	.5	.5	.5	.5	.5	.5	.5	.5	2.0	1.1	.6	.5	.5	.5	.5	.4	.4	.5	.4	.4	.4	.3	.5	.4	.5	.5	.6	.7	.5	.5	.5
.4	.5	.6	.5	.6	.6	.5	.4	.4	.4	.4	.4	.5	.5	.5	.4	.4	.5	.5	.5	.4	.3	.3	.3	.3	.3	.4	.5	.7	.5	.4	.5	.5	.5	.5	.4
.3	.4	.4	.4	.4	.5	.6	.5	.4	.6	.4	.6	.5	.3	.3	.3	.3	.6	.5	.6	.5	.8	.6	.5	.5	1.0	.9	.9	.6	.5	.4	.4	.5	.3	.4	.4
.3	.4	.5	.4	.3	.3	.7	.7	.4	.5	.6	.5	.5	.4	.3	.3	.3	.6	.6	.6	.6	.6	.7	1.0	.9	1.8	1.9	1.8	.9	.5	.5	.6	.5	.5	.5	.4
.3	.3	.3	.2	.2	.2	.4	.8	.6	.5	.6	.5	.4	.4	.3	.3	.6	.6	.5	.6	.7	.6	.6	.7	.6	.4	1.0	.9	.6	.4	.5	.5	.4	.4	.4	.3
.3	.3	.4	.4	.3	.4	.5	.6	.7	.8	.7	.5	.5	.5	.4	.5	.7	.8	.6	.9	1.0	1.2	.8	.4	.2	.6	.5	.5	.6	.5	.6	.5	.4	.5	.5	.5
.6	.5	.5	.6	.4	.3	.3	.4	.4	.6	1.0	.9	.5	.4	.6	.6	.6	.6	.7	1.1	1.1	1.1	.8	.3	.3	.5	.4	.8	.9	.8	.6	.5	.5	.5	.5	.6
.3	.3	.3	.3	.2	.2	.2	.2	.3	.3	1.0	1.3	1.0	.6	.4	.2	.2	.2	.3	1.0	1.0	.9	.3	.5	.6	.5	.5	.6	.7	.7	.5	.7	.7	.6	.5	.4
.4	.4	.5	.4	.3	.3	.2	.3	.2	.3	1.1	1.5	1.1	.8	.3	.2	.3	.2	.3	1.0	.9	.6	.5	.3	.3	.4	.4	.3	.3	.2	.7	.6	.5	.3	.5	.4
.4	.3	.3	.5	.5	.3	.3	.3	.3	.3	.4	1.2	1.2	.7	.3	.3	.3	.3	.3	.8	.9	.6	.6	.3	.3	.3	.3	.3	.3	.8	.7	.6	.7	.5	.4	.4
.3	.3	.3	.4	.4	.3	.3	.3	.3	.3	.6	1.0	.7	.4	.4	.4	.3	.3	.3	.4	.7	.4	.4	.3	.3	.3	.3	.3	.3	.5	.5	.5	.6	.5	.3	.4
.4	.3	.3	.3	.3	.4	.3	.4	.4	.4	.6	.6	.3	.3	.3	.4	.3	.3	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.4	.3	.4	.5
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.6	.5	.4	.4	.4	.5	.4	.4	.5	.5	.5	.5	.5	.5	.4	.5	.5	.4	.4	.4	.4	.4	.4	.4	.5	.4
.6	.5	.5	.5	.6	.6	.6	.6	.5	.5	.5	.8	.6	.5	.5	.4	.5	.5	.5	.5	.6	.5	.8	1.1	.8	.6	.8	1.0	1.1	.9	1.0	1.0	.8	.6	.5	.6
.7	.7	.8	1.0	1.3	1.6	1.3	.9	1.0	.8	.8	.9	.7	.6	.7	1.0	1.4	2.3	2.9	3.5	3.2	2.7	2.6	2.0	1.7	1.8	1.9	2.4	2.4	2.3	2.1	1.6	1.3	1.4	.9	.7
.9	.9	1.1	1.0	1.0	1.0	1.3	1.6	1.6	.9	.7	.7	.8	.8	1.0	1.2	1.2	1.4	1.5	1.7	1.8	1.8	2.0	2.1	2.0	2.1	2.3	2.1	1.9	1.6	1.5	1.4	1.3	1.4	1.0	.9

Figure 51. ATOVS MEAN O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: AMSUA-7 (300 hPa)
NOAA16, using all observations

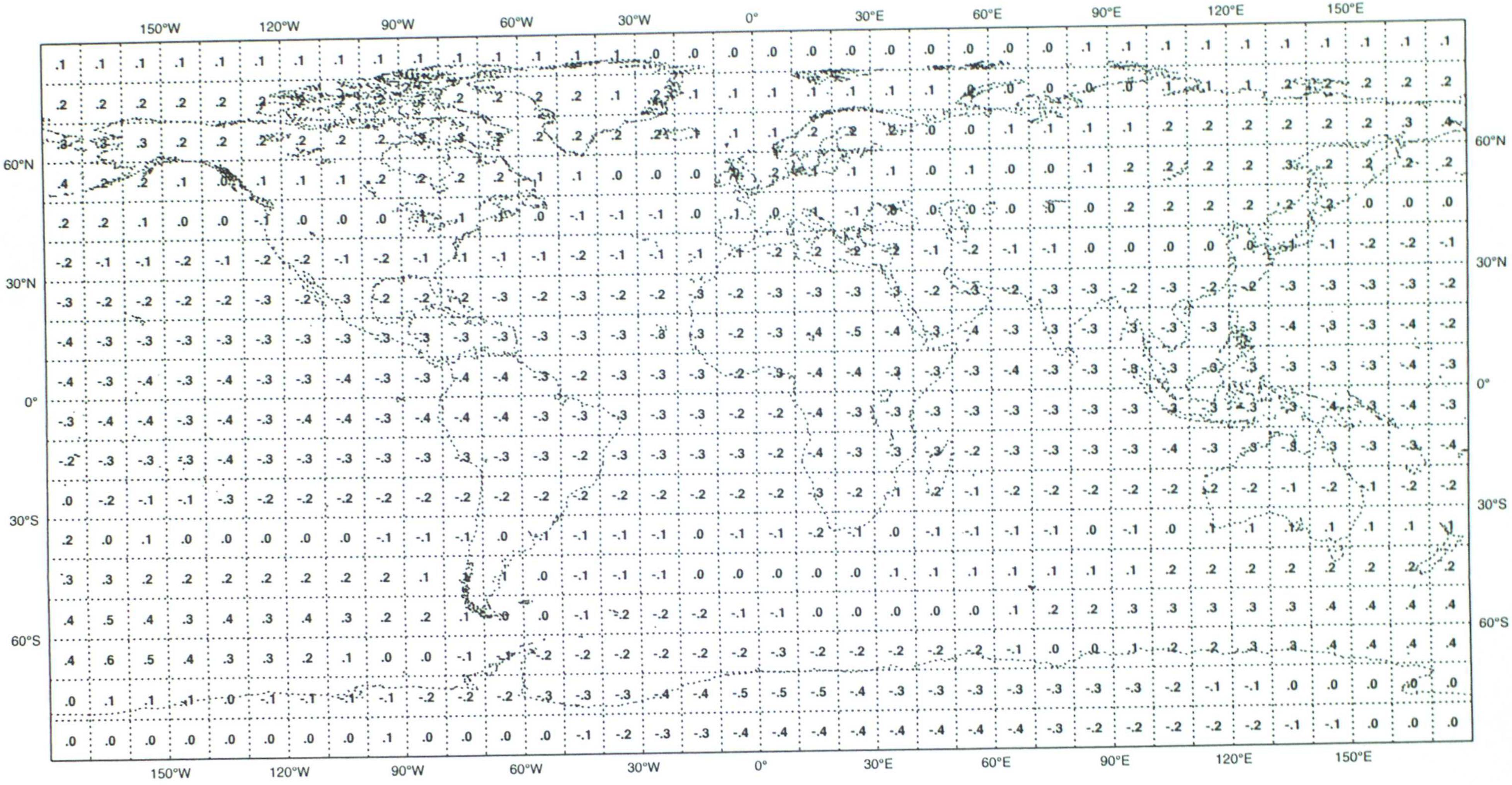

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 52. ATOVS SD O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: AMSUA-7 (300 hPa)
NOAA16, using all observations

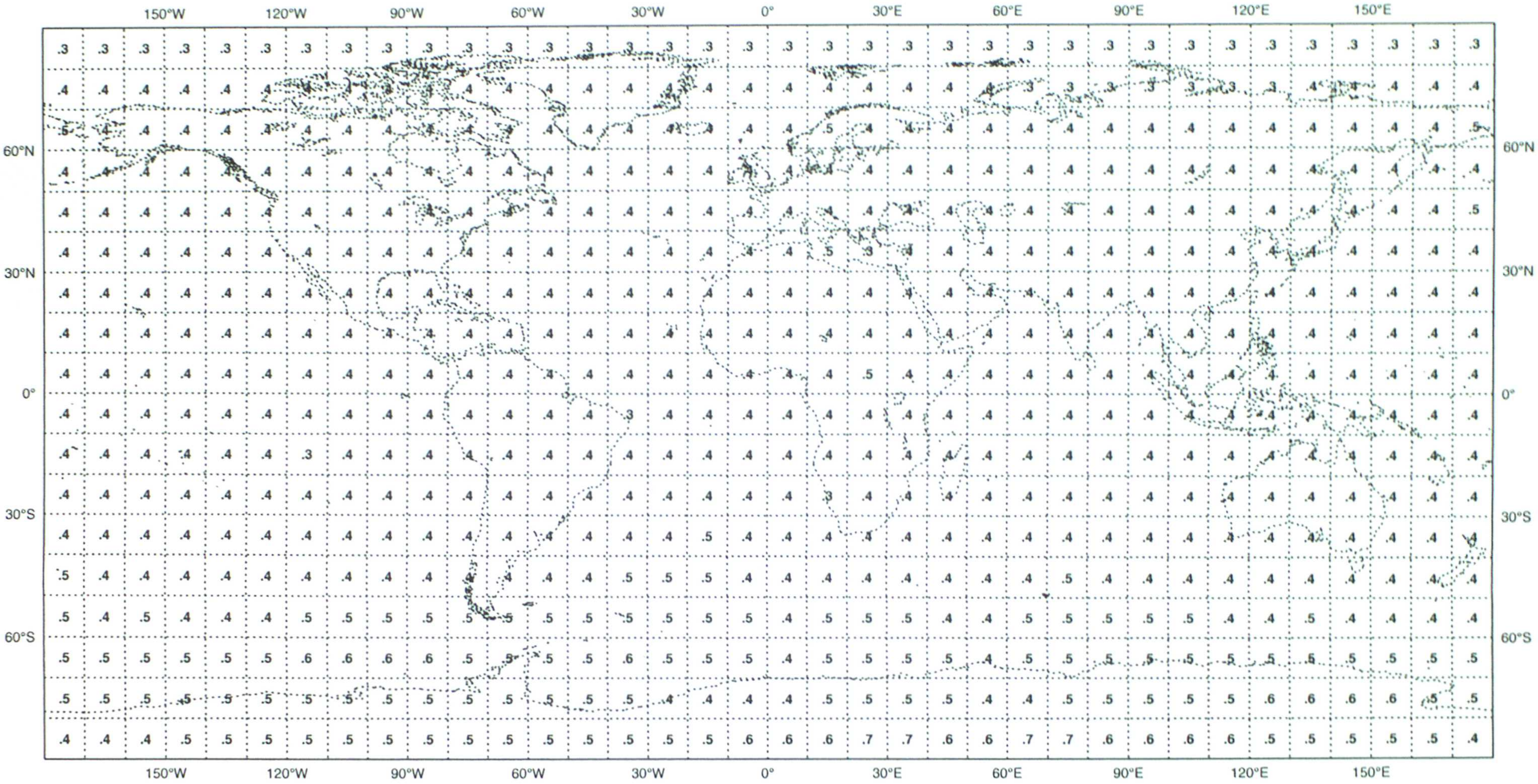
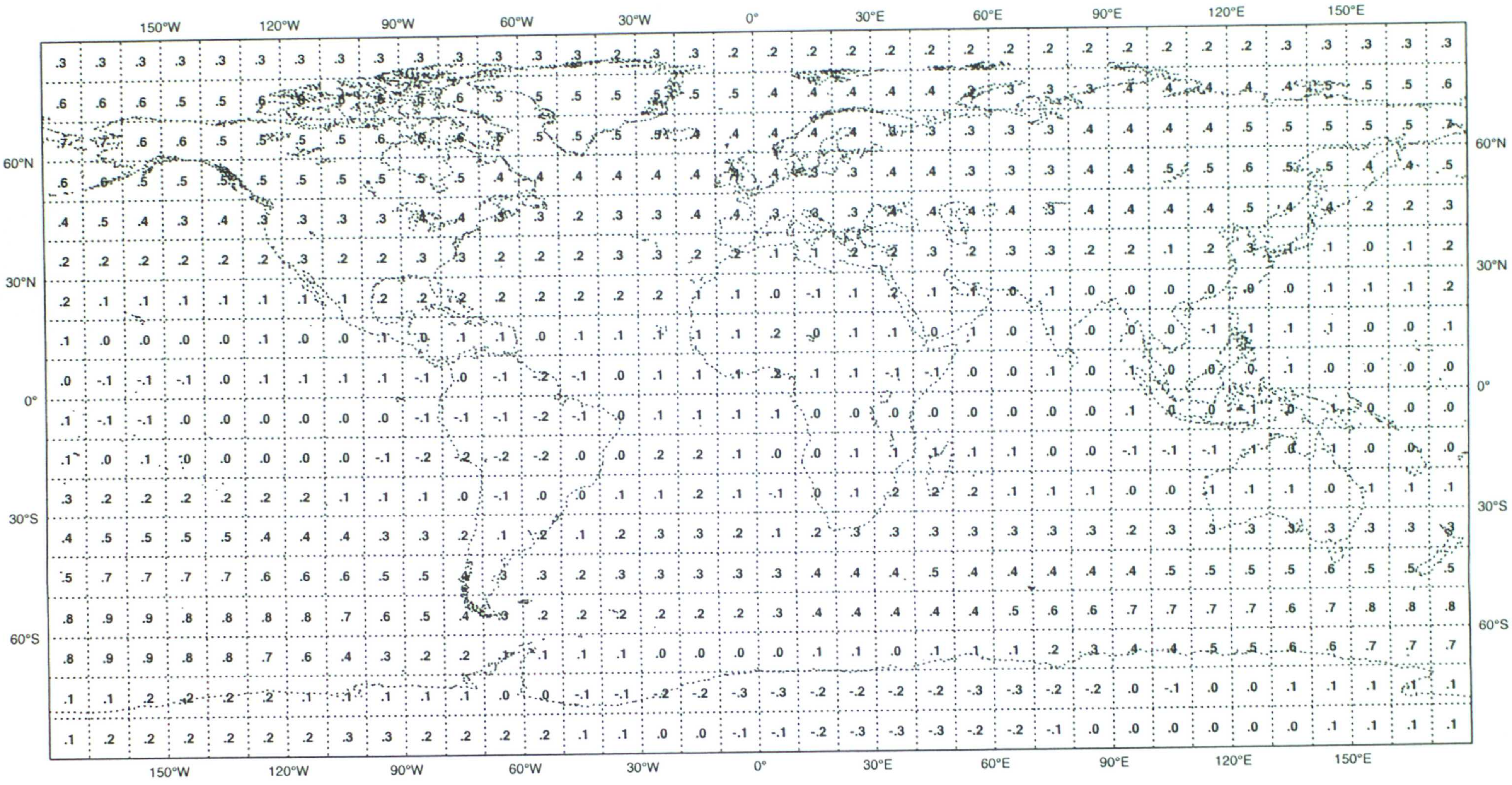

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4
.5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.5 .4 .5 .4 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5 .4 .4 .5 .5 .5 .5 .5 .4 .4 .5 .4 .4 .4 .4
.5 .5 .5 .5 .5 .5 .6 .6 .6 .6 .5 .5 .5 .5 .6 .5 .5 .5 .4 .5 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .4 .4 .5 .5 .5 .5 .4 .4 .5 .5 .5 .5 .5 .6 .6 .6 .6 .5 .5
.4 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .6 .6 .7 .7 .6 .6 .7 .7 .6 .6 .6 .6 .5 .5 .5 .5 .5 .4

Figure 53. ATOVS MEAN O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: AMSUA-9 (100 hPa)
NOAA16, using all observations



.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.2	.3	.3	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.3	.3	.3	.3	.3
.6	.6	.6	.5	.5	.6	.6	.6	.6	.5	.6	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.2	.3	.3	.3	.4	.4	.4	.4	.4	.5	.5	.5	.6
.7	.7	.6	.6	.5	.5	.5	.5	.6	.6	.6	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.4	.4	.4	.4	.5	.5	.5	.5	.5	.7
.6	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.4	.4	.3	.3	.3	.4	.4	.5	.5	.6	.5	.5	.4	.4	.5
.4	.5	.4	.3	.4	.3	.3	.3	.3	.4	.4	.3	.3	.2	.3	.3	.4	.4	.3	.3	.3	.4	.4	.4	.4	.3	.4	.4	.4	.4	.5	.4	.4	.2	.2	.3
.2	.2	.2	.2	.2	.2	.3	.2	.2	.3	.3	.2	.2	.2	.3	.3	.2	.2	.1	.1	.2	.2	.3	.2	.3	.3	.2	.2	.1	.2	.3	.1	.1	.0	.1	.2
.2	.1	.1	.1	.1	.1	.1	.1	.2	.2	.2	.2	.2	.2	.2	.2	.1	.1	.0	-.1	.1	.2	.1	.1	.0	.1	.0	.0	.0	.0	.0	.0	.1	.1	.1	.2
.1	.0	.0	.0	.0	.1	.0	.0	.1	.0	.1	.1	.0	.1	.1	.1	.1	.1	.2	.0	.1	.1	.0	.1	.0	.1	.0	.0	.0	-.1	.1	.1	.1	.0	.0	.1
.0	-.1	-.1	-.1	.0	.1	.1	.1	.1	-.1	.0	-.1	-.2	-.1	.0	.1	.1	.1	.2	.1	.1	-.1	-.1	.0	.0	.1	.0	.1	.0	.0	.0	.1	.0	.0	.0	.0
.1	-.1	-.1	.0	.0	.0	.0	.0	.0	-.1	-.1	-.1	-.2	-.1	.0	.1	.1	.1	.1	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	-.1	.0	-.1	.0	.0	.0
.1	.0	.1	.0	.0	.0	.0	.0	-.1	-.2	-.2	-.2	-.2	.0	.0	.2	.2	.1	.0	.0	.1	.1	.1	.1	.1	.0	.0	-.1	-.1	-.1	-.1	.0	-.1	.0	.0	.0
.3	.2	.2	.2	.2	.2	.2	.1	.1	.1	.0	-.1	.0	.0	.1	.1	.2	.1	-.1	.0	.1	.2	.2	.2	.1	.1	.1	.0	.0	.1	.1	.1	.0	.1	.1	.1
.4	.5	.5	.5	.5	.4	.4	.4	.3	.3	.2	.1	.2	.1	.2	.3	.3	.2	.1	.2	.3	.3	.3	.3	.3	.3	.3	.2	.3	.3	.3	.3	.3	.3	.3	.3
.5	.7	.7	.7	.7	.6	.6	.6	.5	.5	.4	.3	.3	.2	.3	.3	.3	.3	.3	.4	.4	.4	.5	.4	.4	.4	.4	.4	.5	.5	.5	.5	.6	.5	.5	.5
.8	.9	.9	.8	.8	.8	.8	.7	.6	.5	.4	.3	.2	.2	.2	.2	.2	.2	.3	.4	.4	.4	.4	.4	.5	.6	.6	.7	.7	.7	.7	.6	.7	.8	.8	.8
.8	.9	.9	.8	.8	.7	.6	.4	.3	.2	.2	.1	.1	.1	.1	.0	.0	.0	.0	.1	.1	.0	.1	.1	.1	.2	.3	.4	.4	.5	.5	.6	.6	.7	.7	.7
.1	.1	.2	.2	.2	.2	.1	.1	.1	.1	.1	.0	.0	-.1	-.1	-.2	-.2	-.3	-.3	-.2	-.2	-.2	-.2	-.3	-.3	-.2	-.2	.0	-.1	.0	.0	.1	.1	.1	.1	.1
.1	.2	.2	.2	.2	.2	.2	.3	.3	.2	.2	.2	.2	.1	.1	.0	.0	-.1	-.1	-.2	-.3	-.3	-.3	-.2	-.2	-.1	.0	.0	.0	.0	.0	.0	.1	.1	.1	.1

Figure 54. ATOVS SD O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: AMSUA-9 (100 hPa)
NOAA16, using all observations

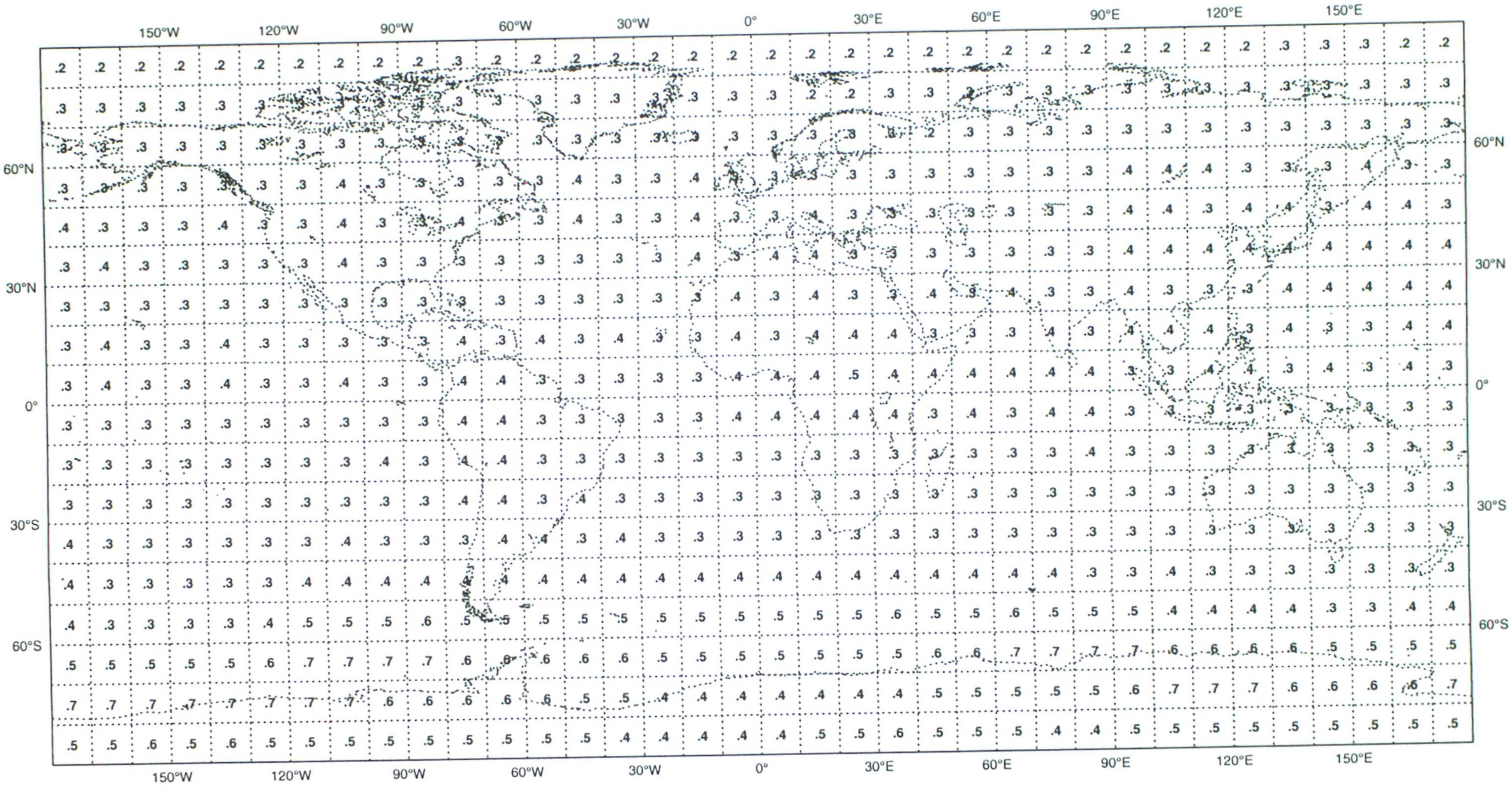
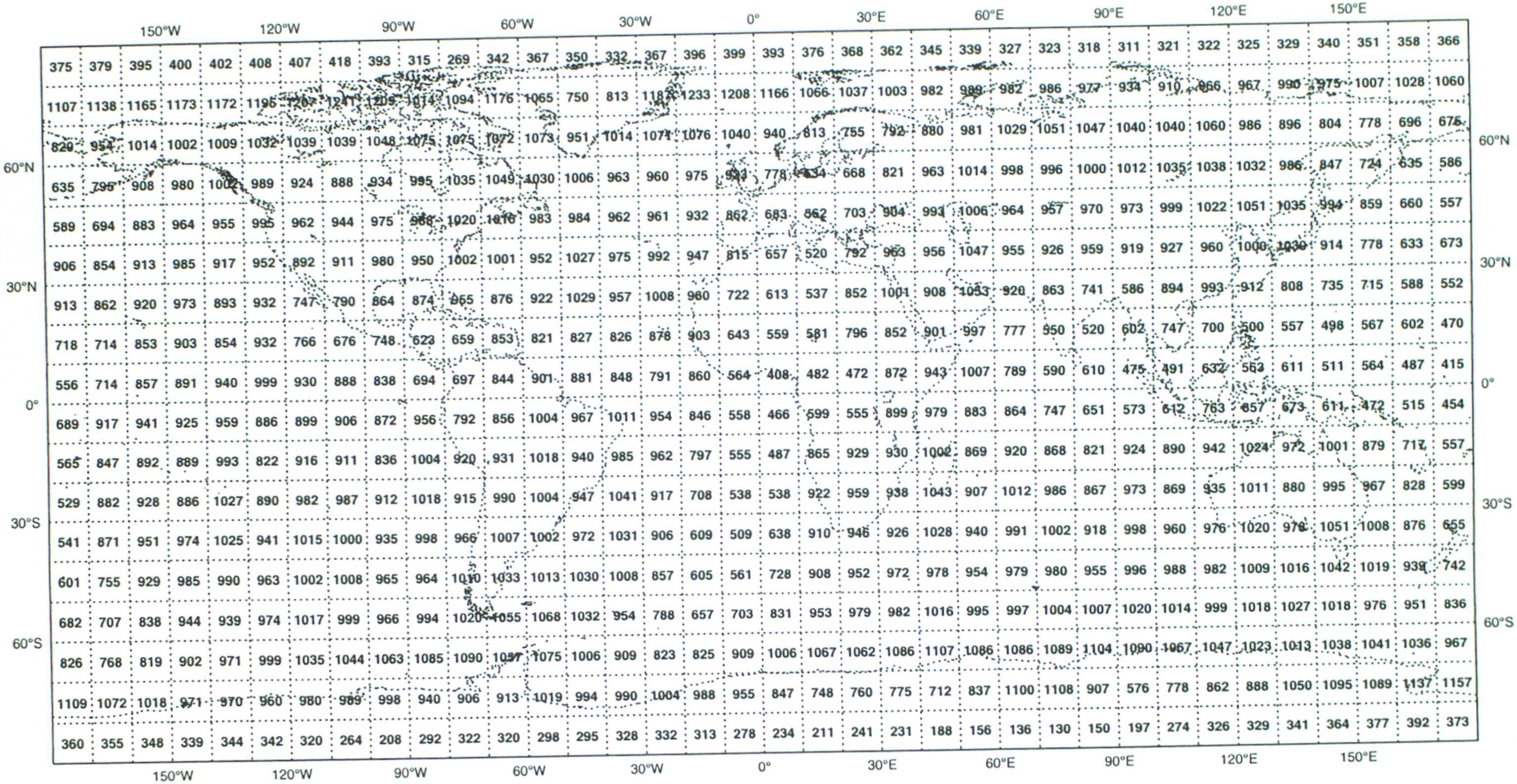

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 55. ATOVS mean daily count. OCTOBER 2003
NOAA17, using all observations
Global average number of observations in 24 hours = 538686



375	379	395	400	402	408	407	418	393	315	269	342	367	350	332	367	396	399	393	376	368	362	345	339	327	323	318	311	321	322	325	329	340	351	358	366
1107	1138	1165	1173	1172	1195	1207	1241	1209	1014	1094	1176	1065	750	813	1187	1233	1208	1166	1066	1037	1003	982	989	982	986	977	934	910	866	967	990	975	1007	1028	1060
829	954	1014	1002	1009	1032	1039	1039	1048	1075	1075	1072	1073	951	1014	1071	1076	1040	940	813	755	792	880	981	1029	1051	1047	1040	1040	1060	986	896	804	778	696	675
635	795	908	980	1002	989	924	888	934	995	1035	1049	1030	1006	963	960	975	933	778	634	668	821	963	1014	998	996	1000	1012	1035	1038	1032	986	847	724	635	586
589	694	883	964	955	995	962	944	975	966	1020	1016	983	984	962	961	932	862	683	862	703	904	993	1006	964	957	970	973	999	1022	1051	1035	994	859	660	557
906	854	913	985	917	952	892	911	980	950	1002	1001	952	1027	975	992	947	815	657	520	792	963	956	1047	955	926	959	919	927	960	1000	1030	914	778	633	673
913	862	920	973	893	932	747	790	864	874	965	876	922	1029	957	1008	960	722	613	537	852	1001	908	1053	920	863	741	586	894	993	912	808	735	715	588	552
718	714	853	903	854	932	766	676	748	623	659	853	821	827	826	878	903	643	559	581	796	852	901	997	777	950	520	602	747	700	500	557	498	567	602	470
556	714	857	891	940	999	930	888	838	694	697	844	901	881	848	791	860	564	408	482	472	872	943	1007	789	590	610	475	491	632	563	611	511	564	487	415
689	917	941	925	959	886	899	906	872	956	792	856	1004	967	1011	954	846	558	466	599	555	899	979	883	864	747	651	573	612	763	657	673	611	472	515	454
565	847	892	889	993	822	916	911	836	1004	920	931	1018	940	985	962	797	555	487	865	929	930	1002	869	920	868	821	924	890	942	1024	972	1001	879	717	557
529	882	928	886	1027	890	982	987	912	1018	915	990	1004	947	1041	917	708	538	538	922	959	938	1043	907	1012	986	867	973	869	935	1011	880	995	967	828	599
541	871	951	974	1025	941	1015	1000	935	998	966	1007	1002	972	1031	906	609	509	638	910	946	926	1028	940	991	1002	918	998	960	976	1020	976	1051	1008	876	655
601	755	929	985	990	963	1002	1008	965	964	1010	1033	1013	1030	1008	857	605	561	728	908	952	972	978	954	979	980	955	996	988	982	1009	1016	1042	1019	939	742
682	707	838	944	939	974	1017	999	966	994	1020	1055	1068	1032	954	788	657	703	831	953	979	982	1016	995	997	1004	1007	1020	1014	999	1018	1027	1018	976	951	836
826	768	819	902	971	999	1035	1044	1063	1085	1090	1057	1075	1006	909	823	825	909	1006	1067	1062	1086	1107	1086	1086	1089	1104	1090	1067	1047	1023	1013	1038	1041	1036	967
1109	1072	1018	971	970	960	980	989	998	940	906	913	1019	994	990	1004	988	955	847	748	760	775	712	837	1100	1108	907	576	778	862	888	1050	1095	1089	1137	1157
360	355	348	339	344	342	320	264	208	292	322	320	298	295	328	332	313	278	234	211	241	231	188	156	136	130	150	197	274	326	329	341	364	377	392	373

Figure 56. ATOVS MEAN O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS8 (Surface)
NOAA17, using all observations

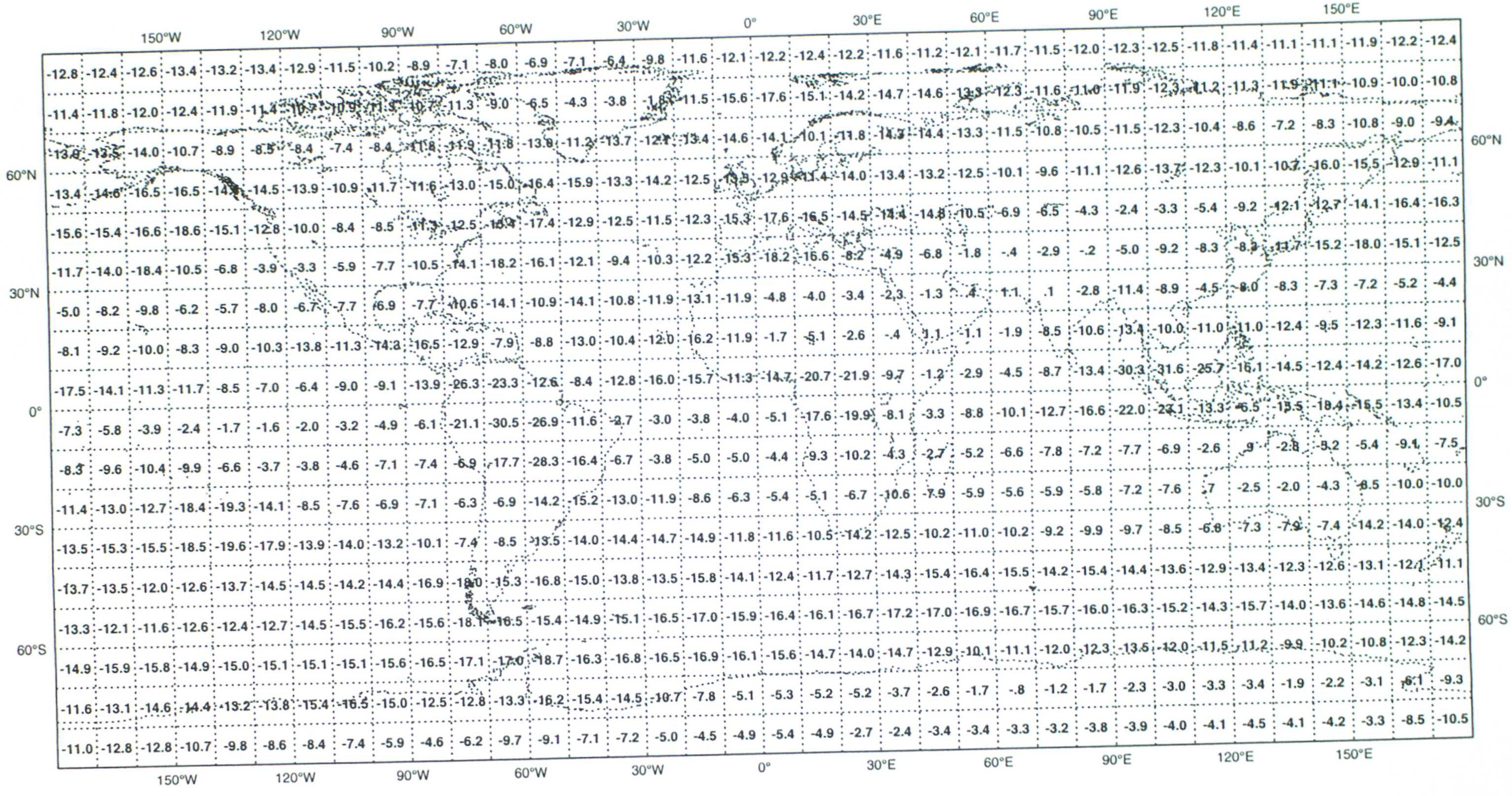
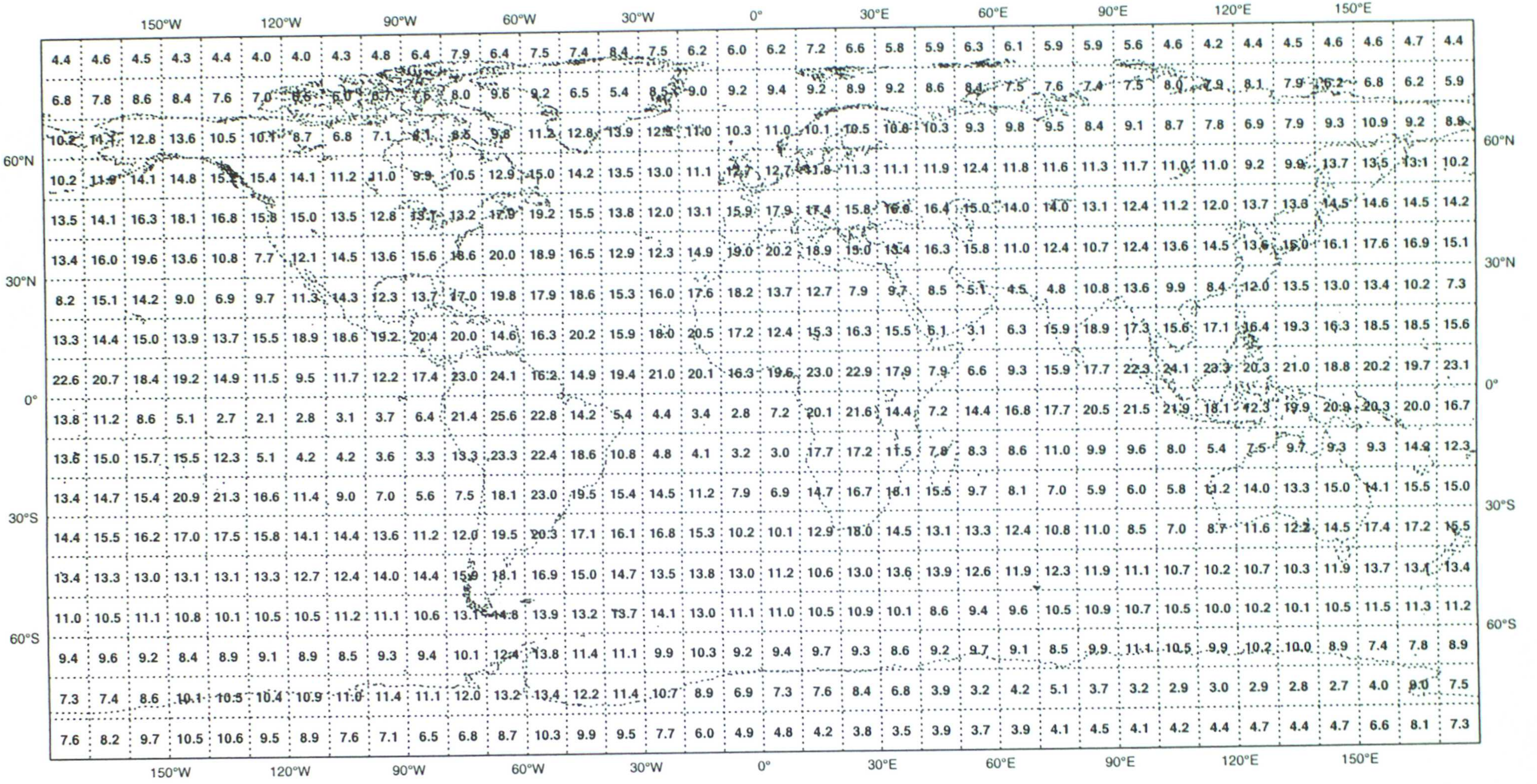
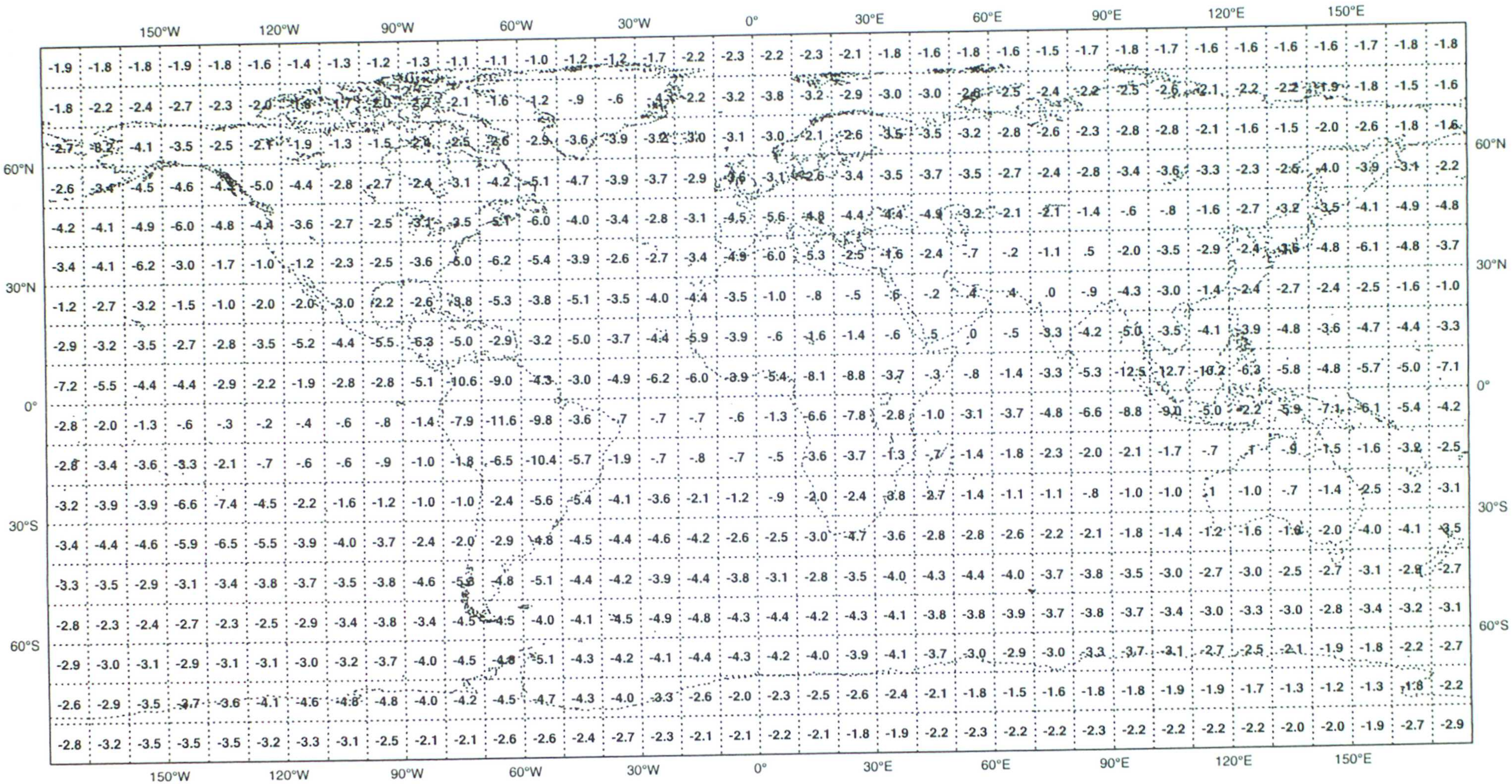

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
-12.8 -12.4 -12.6 -13.4 -13.2 -13.4 -12.9 -11.5 -10.2 -8.9 -7.1 -8.0 -6.9 -7.1 -6.4 -9.8 -11.6 -12.1 -12.2 -12.4 -12.2 -11.6 -11.2 -12.1 -11.7 -11.5 -12.0 -12.3 -12.5 -11.8 -11.4 -11.1 -11.1 -11.9 -12.2 -12.4
-11.4 -11.8 -12.0 -12.4 -11.9 -11.4 -10.7 -10.9 -11.5 -10.7 -11.3 -9.0 -6.5 -4.3 -3.8 -1.8 -11.5 -15.6 -17.6 -15.1 -14.2 -14.7 -14.6 -13.3 -12.3 -11.6 -11.0 -11.9 -12.3 -11.2 -11.3 -11.9 -11.1 -10.9 -10.0 -10.8
-13.6 -13.5 -14.0 -10.7 -8.9 -8.5 -8.4 -7.4 -8.4 -11.8 -11.9 -11.8 -13.8 -11.2 -13.7 -12.1 -13.4 -14.6 -14.1 -10.1 -11.8 -14.3 -14.4 -13.3 -11.5 -10.8 -10.5 -11.5 -12.3 -10.4 -8.6 -7.2 -8.3 -10.8 -9.0 -9.4
-13.4 -14.6 -16.5 -16.5 -14.8 -14.5 -13.9 -10.9 -11.7 -11.6 -13.0 -15.0 -16.4 -15.9 -13.3 -14.2 -12.5 -13.5 -12.9 -11.4 -14.0 -13.4 -13.2 -12.5 -10.1 -9.6 -11.1 -12.6 -13.7 -12.3 -10.1 -10.7 -16.0 -15.5 -12.9 -11.1
-15.6 -15.4 -16.6 -18.6 -15.1 -12.8 -10.0 -8.4 -8.5 -11.3 -12.5 -16.4 -17.4 -12.9 -12.5 -11.5 -12.3 -15.3 -17.6 -16.5 -14.5 -14.4 -14.8 -10.5 -6.9 -6.5 -4.3 -2.4 -3.3 -5.4 -9.2 -12.1 -12.7 -14.1 -16.4 -16.3
-11.7 -14.0 -18.4 -10.5 -6.8 -3.9 -3.3 -5.9 -7.7 -10.5 -14.1 -18.2 -16.1 -12.1 -9.4 -10.3 -12.2 -15.3 -18.2 -16.6 -8.2 -4.9 -6.8 -1.8 -.4 -2.9 -.2 -5.0 -9.2 -8.3 -8.3 -11.7 -15.2 -18.0 -15.1 -12.5
-5.0 -8.2 -9.8 -6.2 -5.7 -8.0 -6.7 -7.7 -6.9 -7.7 -10.6 -14.1 -10.9 -14.1 -10.8 -11.9 -13.1 -11.9 -4.8 -4.0 -3.4 -2.3 -1.3 .4 1.1 .1 -2.8 -11.4 -8.9 -4.5 -8.0 -8.3 -7.3 -7.2 -5.2 -4.4
-8.1 -9.2 -10.0 -8.3 -9.0 -10.3 -13.8 -11.3 -14.3 -16.5 -12.9 -7.9 -8.8 -13.0 -10.4 -12.0 -16.2 -11.9 -1.7 -5.1 -2.6 -.4 1.1 -1.1 -1.9 -8.5 -10.6 -13.4 -10.0 -11.0 -11.0 -12.4 -9.5 -12.3 -11.6 -9.1
-17.5 -14.1 -11.3 -11.7 -8.5 -7.0 -6.4 -9.0 -9.1 -13.9 -26.3 -23.3 -12.6 -8.4 -12.8 -16.0 -15.7 -11.3 -14.7 -20.7 -21.9 -9.7 -1.2 -2.9 -4.5 -8.7 -13.4 -30.3 -31.6 -25.7 -16.1 -14.5 -12.4 -14.2 -12.6 -17.0
-7.3 -5.8 -3.9 -2.4 -1.7 -1.6 -2.0 -3.2 -4.9 -6.1 -21.1 -30.5 -26.9 -11.6 -2.7 -3.0 -3.8 -4.0 -5.1 -17.6 -19.9 -8.1 -3.3 -8.8 -10.1 -12.7 -16.6 -22.0 -23.1 -13.3 -6.5 -13.5 -18.4 -15.5 -13.4 -10.5
-8.3 -9.6 -10.4 -9.9 -6.6 -3.7 -3.8 -4.6 -7.1 -7.4 -6.9 -17.7 -28.3 -16.4 -6.7 -3.8 -5.0 -5.0 -4.4 -9.3 -10.2 -4.3 -2.7 -5.2 -6.6 -7.8 -7.2 -7.7 -6.9 -2.6 .9 -2.8 -5.2 -5.4 -9.1 -7.5
-11.4 -13.0 -12.7 -18.4 -19.3 -14.1 -8.5 -7.6 -6.9 -7.1 -6.3 -6.9 -14.2 -15.2 -13.0 -11.9 -8.6 -6.3 -5.4 -5.1 -6.7 -10.6 -7.9 -5.9 -5.6 -5.9 -5.8 -7.2 -7.6 .7 -2.5 -2.0 -4.3 -8.5 -10.0 -10.0
-13.5 -15.3 -15.5 -18.5 -19.6 -17.9 -13.9 -14.0 -13.2 -10.1 -7.4 -8.5 -13.5 -14.0 -14.4 -14.7 -14.9 -11.8 -11.6 -10.5 -14.2 -12.5 -10.2 -11.0 -10.2 -9.2 -9.9 -9.7 -8.5 -6.8 -7.3 -7.9 -7.4 -14.2 -14.0 -12.4
-13.7 -13.5 -12.0 -12.6 -13.7 -14.5 -14.5 -14.2 -14.4 -16.9 -18.0 -15.3 -16.8 -15.0 -13.8 -13.5 -15.8 -14.1 -12.4 -11.7 -12.7 -14.3 -15.4 -16.4 -15.5 -14.2 -15.4 -14.4 -13.6 -12.9 -13.4 -12.3 -12.6 -13.1 -12.1 -11.1
-13.3 -12.1 -11.6 -12.6 -12.4 -12.7 -14.5 -15.5 -16.2 -15.6 -18.1 -16.5 -15.4 -14.9 -15.1 -16.5 -17.0 -15.9 -16.4 -16.1 -16.7 -17.2 -17.0 -16.9 -16.7 -15.7 -16.0 -16.3 -15.2 -14.3 -15.7 -14.0 -13.6 -14.6 -14.8 -14.5
-14.9 -15.9 -15.8 -14.9 -15.0 -15.1 -15.1 -15.1 -15.6 -16.5 -17.1 -17.0 -18.7 -16.3 -16.8 -16.5 -16.9 -16.1 -15.6 -14.7 -14.0 -14.7 -12.9 -10.1 -11.1 -12.0 -12.3 -13.6 -12.0 -11.5 -11.2 -9.9 -10.2 -10.8 -12.3 -14.2
-11.6 -13.1 -14.6 -14.4 -13.2 -13.8 -15.4 -16.5 -15.0 -12.5 -12.8 -13.3 -16.2 -15.4 -14.5 -10.7 -7.8 -5.1 -5.3 -5.2 -5.2 -3.7 -2.6 -1.7 -.8 -1.2 -1.7 -2.3 -3.0 -3.3 -3.4 -1.9 -2.2 -3.1 -6.1 -9.3
-11.0 -12.8 -12.8 -10.7 -9.8 -8.6 -8.4 -7.4 -5.9 -4.6 -6.2 -9.7 -9.1 -7.1 -7.2 -5.0 -4.5 -4.9 -5.4 -4.9 -2.7 -2.4 -3.4 -3.4 -3.3 -3.2 -3.8 -3.9 -4.0 -4.1 -4.5 -4.1 -4.2 -3.3 -8.5 -10.5

Figure 57. ATOVS SD O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS8 (Surface)
NOAA17, using all observations



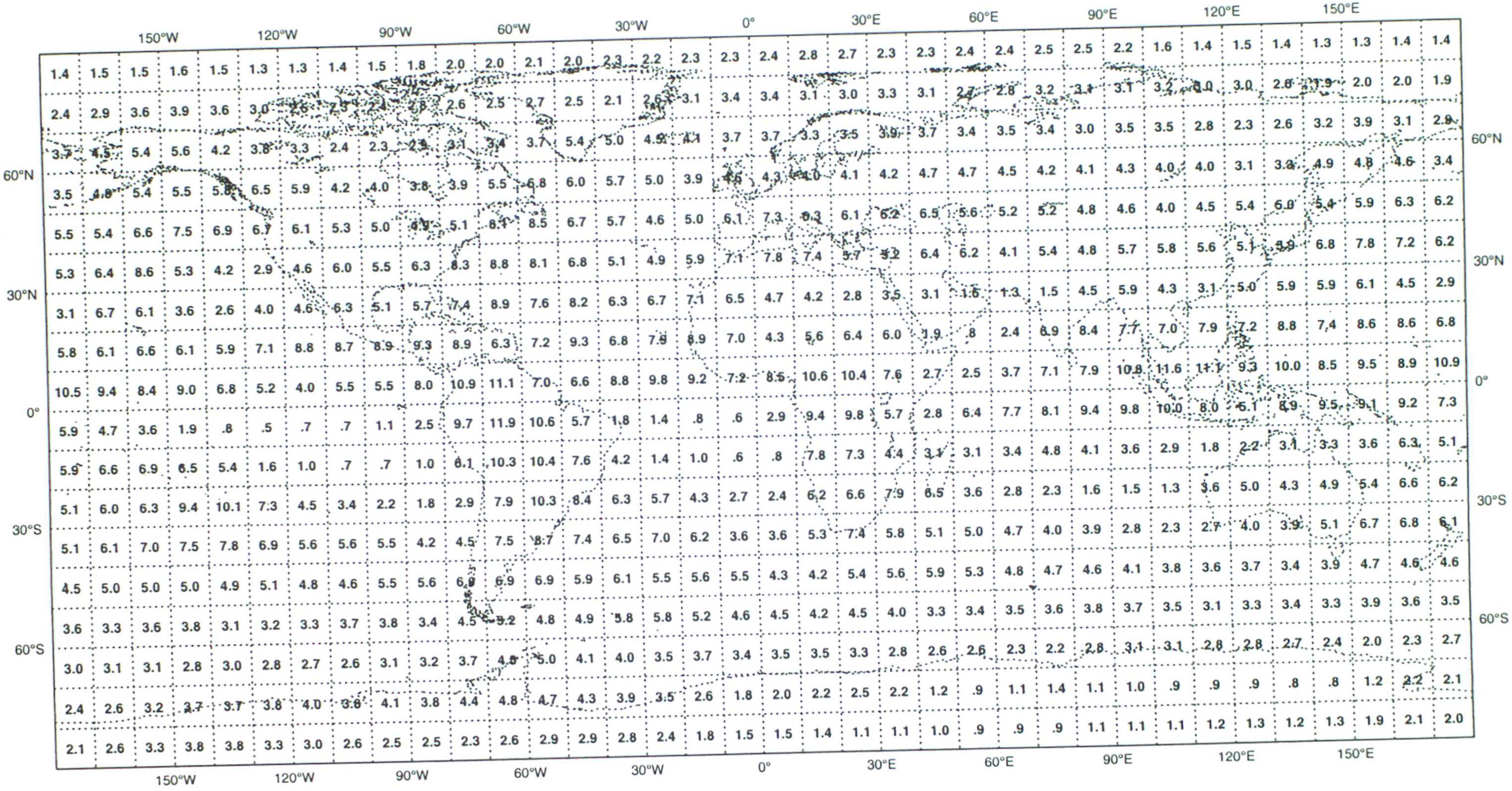
4.4	4.6	4.5	4.3	4.4	4.0	4.0	4.3	4.8	6.4	7.9	6.4	7.5	7.4	8.4	7.5	6.2	6.0	6.2	7.2	6.6	5.8	5.9	6.3	6.1	5.9	5.9	5.6	4.6	4.2	4.4	4.5	4.6	4.6	4.7	4.4
6.8	7.8	8.6	8.4	7.6	7.0	6.6	6.0	6.7	7.5	8.0	9.6	9.2	6.5	5.4	8.5	9.0	9.2	9.4	9.2	8.9	9.2	8.6	8.4	7.5	7.6	7.4	7.5	8.0	7.9	8.1	7.9	6.2	6.8	6.2	5.9
10.2	11.7	12.8	13.6	10.5	10.1	8.7	6.8	7.1	8.1	8.5	9.8	11.2	12.8	13.9	12.5	11.0	10.3	11.0	10.1	10.5	10.8	10.3	9.3	9.8	9.5	8.4	9.1	8.7	7.8	6.9	7.9	9.3	10.9	9.2	8.9
10.2	11.9	14.1	14.8	[illegible]	15.4	14.1	11.2	11.0	9.9	10.5	12.9	15.0	14.2	13.5	13.0	11.1	12.7	12.7	11.8	11.3	11.1	11.9	12.4	11.8	11.6	11.3	11.7	11.0	11.0	9.2	9.9	13.7	13.5	13.1	10.2
13.5	14.1	16.3	18.1	16.8	15.8	15.0	13.5	12.8	13.1	13.2	17.9	19.2	15.5	13.8	12.0	13.1	15.9	17.9	17.4	15.8	16.6	16.4	15.0	14.0	14.0	13.1	12.4	11.2	12.0	13.7	13.8	14.5	14.6	14.5	14.2
13.4	16.0	19.6	13.6	10.8	7.7	12.1	14.5	13.6	15.6	18.6	20.0	18.9	16.5	12.9	12.3	14.9	19.0	20.2	18.9	19.0	13.4	16.3	15.8	11.0	12.4	10.7	12.4	13.6	14.5	13.6	15.0	16.1	17.6	16.9	15.1
8.2	15.1	14.2	9.0	6.9	9.7	11.3	14.3	12.3	13.7	17.0	19.8	17.9	18.6	15.3	16.0	17.6	18.2	13.7	12.7	7.9	9.7	8.5	5.1	4.5	4.8	10.8	13.6	9.9	8.4	12.0	13.5	13.0	13.4	10.2	7.3
13.3	14.4	15.0	13.9	13.7	15.5	18.9	18.6	19.2	20.4	20.0	14.6	16.3	20.2	15.9	18.0	20.5	17.2	12.4	15.3	16.3	15.5	6.1	3.1	6.3	15.9	18.9	17.3	15.6	17.1	16.4	19.3	16.3	18.5	18.5	15.6
22.6	20.7	18.4	19.2	14.9	11.5	9.5	11.7	12.2	17.4	23.0	24.1	16.2	14.9	19.4	21.0	20.1	16.3	19.6	23.0	22.9	17.9	7.9	6.6	9.3	15.9	17.7	22.3	24.1	23.3	20.3	21.0	18.8	20.2	19.7	23.1
13.8	11.2	8.6	5.1	2.7	2.1	2.8	3.1	3.7	6.4	21.4	25.6	22.8	14.2	5.4	4.4	3.4	2.8	7.2	20.1	21.6	14.4	7.2	14.4	16.8	17.7	20.5	21.5	21.9	18.1	12.3	19.9	20.9	20.3	20.0	16.7
13.6	15.0	15.7	15.5	12.3	5.1	4.2	4.2	3.6	3.3	13.3	23.3	22.4	18.6	10.8	4.8	4.1	3.2	3.0	17.7	17.2	11.5	7.8	8.3	8.6	11.0	9.9	9.6	8.0	5.4	7.5	9.7	9.3	9.3	14.8	12.3
13.4	14.7	15.4	20.9	21.3	16.6	11.4	9.0	7.0	5.6	7.5	18.1	23.0	19.5	15.4	14.5	11.2	7.9	6.9	14.7	16.7	18.1	15.5	9.7	8.1	7.0	5.9	6.0	5.8	11.2	14.0	13.3	15.0	14.1	15.5	15.0
14.4	15.5	16.2	17.0	17.5	15.8	14.1	14.4	13.6	11.2	12.0	19.5	20.3	17.1	16.1	16.8	15.3	10.2	10.1	12.9	18.0	14.5	13.1	13.3	12.4	10.8	11.0	8.5	7.0	8.7	11.6	12.2	14.5	17.4	17.2	15.5
13.4	13.3	13.0	13.1	13.1	13.3	12.7	12.4	14.0	14.4	15.9	18.1	16.9	15.0	14.7	13.5	13.8	13.0	11.2	10.6	13.0	13.6	13.9	12.6	11.9	12.3	11.9	11.1	10.7	10.2	10.7	10.3	11.9	13.7	13.1	13.4
11.0	10.5	11.1	10.8	10.1	10.5	10.5	11.2	11.1	10.6	13.1	14.8	13.9	13.2	13.7	14.1	13.0	11.1	11.0	10.5	10.9	10.1	8.6	9.4	9.6	10.5	10.9	10.7	10.5	10.0	10.2	10.1	10.5	11.5	11.3	11.2
9.4	9.6	9.2	8.4	8.9	9.1	8.9	8.5	9.3	9.4	10.1	12.4	13.8	11.4	11.1	9.9	10.3	9.2	9.4	9.7	9.3	8.6	9.2	9.7	9.1	8.5	9.9	11.1	10.5	9.9	10.2	10.0	8.9	7.4	7.8	8.9
7.3	7.4	8.6	10.1	10.5	10.4	10.9	11.0	11.4	11.1	12.0	13.2	13.4	12.2	11.4	10.7	8.9	6.9	7.3	7.6	8.4	6.8	3.9	3.2	4.2	5.1	3.7	3.2	2.9	3.0	2.9	2.8	2.7	4.0	8.0	7.5
7.6	8.2	9.7	10.5	10.6	9.5	8.9	7.6	7.1	6.5	6.8	8.7	10.3	9.9	9.5	7.7	6.0	4.9	4.8	4.2	3.8	3.5	3.9	3.7	3.9	4.1	4.5	4.1	4.2	4.4	4.7	4.4	4.7	6.6	8.1	7.3

Figure 58. ATOVS MEAN O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS15 (700 hPa)
NOAA17, using all observations



-1.9	-1.8	-1.8	-1.9	-1.8	-1.6	-1.4	-1.3	-1.2	-1.3	-1.1	-1.1	-1.0	-1.2	-1.2	-1.7	-2.2	-2.3	-2.2	-2.3	-2.1	-1.8	-1.6	-1.8	-1.6	-1.5	-1.7	-1.8	-1.7	-1.6	-1.6	-1.6	-1.6	-1.7	-1.8	-1.8
-1.8	-2.2	-2.4	-2.7	-2.3	-2.0	-1.8	-1.7	-2.0	-2.2	-2.1	-1.6	-1.2	-.9	-.6	-4.3	-2.2	-3.2	-3.8	-3.2	-2.9	-3.0	-3.0	-2.6	-2.5	-2.4	-2.2	-2.5	-2.6	-2.1	-2.2	-2.2	-1.9	-1.8	-1.5	-1.6
-2.7	-8.2	-4.1	-3.5	-2.5	-2.1	-1.9	-1.3	-1.5	-2.4	-2.5	-2.6	-2.9	-3.6	-3.9	-3.2	-3.0	-3.1	-3.0	-2.1	-2.6	-3.5	-3.5	-3.2	-2.8	-2.6	-2.3	-2.8	-2.8	-2.1	-1.6	-1.5	-2.0	-2.6	-1.8	-1.6
-2.6	-3.4	-4.5	-4.6	-4.[illegible]	-5.0	-4.4	-2.8	-2.7	-2.4	-3.1	-4.2	-5.1	-4.7	-3.9	-3.7	-2.9	-3.6	-3.1	-2.6	-3.4	-3.5	-3.7	-3.5	-2.7	-2.4	-2.8	-3.4	-3.6	-3.3	-2.3	-2.6	-4.0	-3.9	-3.1	-2.2
-4.2	-4.1	-4.9	-6.0	-4.8	-4.4	-3.6	-2.7	-2.5	-3.1	-3.5	-5.1	-6.0	-4.0	-3.4	-2.8	-3.1	-4.5	-5.6	-4.8	-4.4	-4.4	-4.9	-3.2	-2.1	-2.1	-1.4	-.6	-.8	-1.6	-2.7	-3.2	-3.5	-4.1	-4.9	-4.8
-3.4	-4.1	-6.2	-3.0	-1.7	-1.0	-1.2	-2.3	-2.5	-3.6	-6.0	-6.2	-5.4	-3.9	-2.6	-2.7	-3.4	-4.9	-6.0	-5.3	-2.5	-1.6	-2.4	-.7	-.2	-1.1	.5	-2.0	-3.5	-2.9	-2.4	-3.6	-4.8	-6.1	-4.8	-3.7
-1.2	-2.7	-3.2	-1.5	-1.0	-2.0	-2.0	-3.0	-2.2	-2.6	-3.8	-5.3	-3.8	-5.1	-3.5	-4.0	-4.4	-3.5	-1.0	-.8	-.5	-.6	-.2	.4	.4	.0	-.9	-4.3	-3.0	-1.4	-2.4	-2.7	-2.4	-2.5	-1.6	-1.0
-2.9	-3.2	-3.5	-2.7	-2.8	-3.5	-5.2	-4.4	-5.5	-6.3	-5.0	-2.9	-3.2	-5.0	-3.7	-4.4	-5.9	-3.9	-.6	-1.6	-1.4	-.6	.5	.0	-.5	-3.3	-4.2	-5.0	-3.5	-4.1	-3.9	-4.8	-3.6	-4.7	-4.4	-3.3
-7.2	-5.5	-4.4	-4.4	-2.9	-2.2	-1.9	-2.8	-2.8	-5.1	-10.6	-9.0	-4.3	-3.0	-4.9	-6.2	-6.0	-3.9	-5.4	-8.1	-8.8	-3.7	-.3	-.8	-1.4	-3.3	-5.3	-12.5	-12.7	-10.2	-6.3	-5.8	-4.8	-5.7	-5.0	-7.1
-2.8	-2.0	-1.3	-.6	-.3	-.2	-.4	-.6	-.8	-1.4	-7.9	-11.6	-9.8	-3.6	-.7	-.7	-.7	-.6	-1.3	-6.6	-7.8	-2.8	-1.0	-3.1	-3.7	-4.8	-6.6	-8.8	-9.0	-5.0	-2.2	-5.9	-7.1	-6.1	-5.4	-4.2
-2.8	-3.4	-3.6	-3.3	-2.1	-.7	-.6	-.6	-.9	-1.0	-1.8	-6.5	-10.4	-5.7	-1.9	-.7	-.8	-.7	-.5	-3.6	-3.7	-1.3	-.7	-1.4	-1.8	-2.3	-2.0	-2.1	-1.7	-.7	.1	-.9	-1.5	-1.6	-3.2	-2.5
-3.2	-3.9	-3.9	-6.6	-7.4	-4.5	-2.2	-1.6	-1.2	-1.0	-1.0	-2.4	-5.6	-5.4	-4.1	-3.6	-2.1	-1.2	-.9	-2.0	-2.4	-3.8	-2.7	-1.4	-1.1	-1.1	-.8	-1.0	-1.0	.1	-1.0	-.7	-1.4	-2.5	-3.2	-3.1
-3.4	-4.4	-4.6	-5.9	-6.5	-5.5	-3.9	-4.0	-3.7	-2.4	-2.0	-2.9	-4.8	-4.5	-4.4	-4.6	-4.2	-2.6	-2.5	-3.0	-4.7	-3.6	-2.8	-2.8	-2.6	-2.2	-2.1	-1.8	-1.4	-1.2	-1.6	-1.6	-2.0	-4.0	-4.1	-3.5
-3.3	-3.5	-2.9	-3.1	-3.4	-3.8	-3.7	-3.5	-3.8	-4.6	-5.3	-4.8	-5.1	-4.4	-4.2	-3.9	-4.4	-3.8	-3.1	-2.8	-3.5	-4.0	-4.3	-4.4	-4.0	-3.7	-3.8	-3.5	-3.0	-2.7	-3.0	-2.5	-2.7	-3.1	-2.9	-2.7
-2.8	-2.3	-2.4	-2.7	-2.3	-2.5	-2.9	-3.4	-3.8	-3.4	-4.5	-4.5	-4.0	-4.1	-4.5	-4.9	-4.8	-4.3	-4.4	-4.2	-4.3	-4.1	-3.8	-3.8	-3.9	-3.7	-3.8	-3.7	-3.4	-3.0	-3.3	-3.0	-2.8	-3.4	-3.2	-3.1
-2.9	-3.0	-3.1	-2.9	-3.1	-3.1	-3.0	-3.2	-3.7	-4.0	-4.5	-4.8	-5.1	-4.3	-4.2	-4.1	-4.4	-4.3	-4.2	-4.0	-3.9	-4.1	-3.7	-3.0	-2.9	-3.0	-3.3	-3.7	-3.1	-2.7	-2.5	-2.1	-1.9	-1.8	-2.2	-2.7
-2.6	-2.9	-3.5	-3.7	-3.6	-4.1	-4.6	-4.8	-4.8	-4.0	-4.2	-4.5	-4.7	-4.3	-4.0	-3.3	-2.6	-2.0	-2.3	-2.5	-2.6	-2.4	-2.1	-1.8	-1.5	-1.6	-1.8	-1.8	-1.9	-1.9	-1.7	-1.3	-1.2	-1.3	-1.8	-2.2
-2.8	-3.2	-3.5	-3.5	-3.5	-3.2	-3.3	-3.1	-2.5	-2.1	-2.1	-2.6	-2.6	-2.4	-2.7	-2.3	-2.1	-2.1	-2.2	-2.1	-1.8	-1.9	-2.2	-2.3	-2.2	-2.2	-2.3	-2.2	-2.2	-2.2	-2.2	-2.0	-2.0	-1.9	-2.7	-2.9

Figure 59. ATOVS SD O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS15 (700 hPa)
NOAA17, using all observations



1.4	1.5	1.5	1.6	1.5	1.3	1.3	1.4	1.5	1.8	2.0	2.0	2.1	2.0	2.3	2.2	2.3	2.3	2.4	2.8	2.7	2.3	2.3	2.4	2.4	2.5	2.5	2.2	1.6	1.4	1.5	1.4	1.3	1.3	1.4	1.4
2.4	2.9	3.6	3.9	3.6	3.0	2.6	2.3	2.4	2.8	2.6	2.5	2.7	2.5	2.1	2.6	3.1	3.4	3.4	3.1	3.0	3.3	3.1	2.7	2.8	3.2	3.1	3.1	3.2	3.0	3.0	2.6	1.9	2.0	2.0	1.9
3.7	4.5	5.4	5.6	4.2	3.8	3.3	2.4	2.3	2.3	3.1	3.4	3.7	5.4	5.0	4.9	4.1	3.7	3.7	3.3	3.5	3.9	3.7	3.4	3.5	3.4	3.0	3.5	3.5	2.8	2.3	2.6	3.2	3.9	3.1	2.9
3.5	4.8	5.4	5.5	5.8	6.5	5.9	4.2	4.0	3.8	3.9	5.5	6.8	6.0	5.7	5.0	3.9	4.6	4.3	4.0	4.1	4.2	4.7	4.7	4.5	4.2	4.1	4.3	4.0	4.0	3.1	3.3	4.9	4.8	4.6	3.4
5.5	5.4	6.6	7.5	6.9	6.7	6.1	5.3	5.0	4.9	5.1	8.1	8.5	6.7	5.7	4.6	5.0	6.1	7.3	6.3	6.1	6.2	6.5	5.6	5.2	5.2	4.8	4.6	4.0	4.5	5.4	6.0	5.4	5.9	6.3	6.2
5.3	6.4	8.6	5.3	4.2	2.9	4.6	6.0	5.5	6.3	8.3	8.8	8.1	6.8	5.1	4.9	5.9	7.1	7.8	7.4	5.7	5.2	6.4	6.2	4.1	5.4	4.8	5.7	5.8	5.6	5.1	5.9	6.8	7.8	7.2	6.2
3.1	6.7	6.1	3.6	2.6	4.0	4.6	6.3	5.1	5.7	7.4	8.9	7.6	8.2	6.3	6.7	7.1	6.5	4.7	4.2	2.8	3.5	3.1	1.6	1.3	1.5	4.5	5.9	4.3	3.1	5.0	5.9	5.9	6.1	4.5	2.9
5.8	6.1	6.6	6.1	5.9	7.1	8.8	8.7	8.9	9.3	8.9	6.3	7.2	9.3	6.8	7.9	8.9	7.0	4.3	5.6	6.4	6.0	1.9	.8	2.4	6.9	8.4	7.7	7.0	7.9	7.2	8.8	7.4	8.6	8.6	6.8
10.5	9.4	8.4	9.0	6.8	5.2	4.0	5.5	5.5	8.0	10.9	11.1	7.0	6.6	8.8	9.8	9.2	7.2	8.5	10.6	10.4	7.6	2.7	2.5	3.7	7.1	7.9	10.8	11.6	11.1	9.3	10.0	8.5	9.5	8.9	10.9
5.9	4.7	3.6	1.9	.8	.5	.7	.7	1.1	2.5	9.7	11.9	10.6	5.7	1.8	1.4	.8	.6	2.9	9.4	9.8	5.7	2.8	6.4	7.7	8.1	9.4	9.8	10.0	8.0	6.1	8.9	9.5	9.1	9.2	7.3
5.9	6.6	6.9	6.5	5.4	1.6	1.0	.7	.7	1.0	6.1	10.3	10.4	7.6	4.2	1.4	1.0	.6	.8	7.8	7.3	4.4	3.1	3.1	3.4	4.8	4.1	3.6	2.9	1.8	2.2	3.1	3.3	3.6	6.3	5.1
5.1	6.0	6.3	9.4	10.1	7.3	4.5	3.4	2.2	1.8	2.9	7.9	10.3	8.4	6.3	5.7	4.3	2.7	2.4	6.2	6.6	7.9	6.5	3.6	2.8	2.3	1.6	1.5	1.3	3.6	5.0	4.3	4.9	5.4	6.6	6.2
5.1	6.1	7.0	7.5	7.8	6.9	5.6	5.6	5.5	4.2	4.5	7.5	8.7	7.4	6.5	7.0	6.2	3.6	3.6	5.3	7.4	5.8	5.1	5.0	4.7	4.0	3.9	2.8	2.3	2.7	4.0	3.9	5.1	6.7	6.8	6.1
4.5	5.0	5.0	5.0	4.9	5.1	4.8	4.6	5.5	5.6	6.9	6.9	6.9	5.9	6.1	5.5	5.6	5.5	4.3	4.2	5.4	5.6	5.9	5.3	4.8	4.7	4.6	4.1	3.8	3.6	3.7	3.4	3.9	4.7	4.6	4.6
3.6	3.3	3.6	3.8	3.1	3.2	3.3	3.7	3.8	3.4	4.5	5.2	4.8	4.9	5.8	5.8	5.2	4.6	4.5	4.2	4.5	4.0	3.3	3.4	3.5	3.6	3.8	3.7	3.5	3.1	3.3	3.4	3.3	3.9	3.6	3.5
3.0	3.1	3.1	2.8	3.0	2.8	2.7	2.6	3.1	3.2	3.7	4.5	5.0	4.1	4.0	3.5	3.7	3.4	3.5	3.5	3.3	2.8	2.6	2.6	2.3	2.2	2.8	3.1	3.1	2.8	2.8	2.7	2.4	2.0	2.3	2.7
2.4	2.6	3.2	3.7	3.7	3.8	4.0	3.8	4.1	3.8	4.4	4.8	4.7	4.3	3.9	3.5	2.6	1.8	2.0	2.2	2.5	2.2	1.2	.9	1.1	1.4	1.1	1.0	.9	.9	.9	.8	.8	1.2	2.2	2.1
2.1	2.6	3.3	3.8	3.8	3.3	3.0	2.6	2.5	2.5	2.3	2.6	2.9	2.9	2.8	2.4	1.8	1.5	1.5	1.4	1.1	1.1	1.0	.9	.9	.9	1.1	1.1	1.1	1.2	1.3	1.2	1.3	1.9	2.1	2.0

Figure 60. ATOVS MEAN O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS11 (500 - 700 hPa)
NOAA17, using all observations

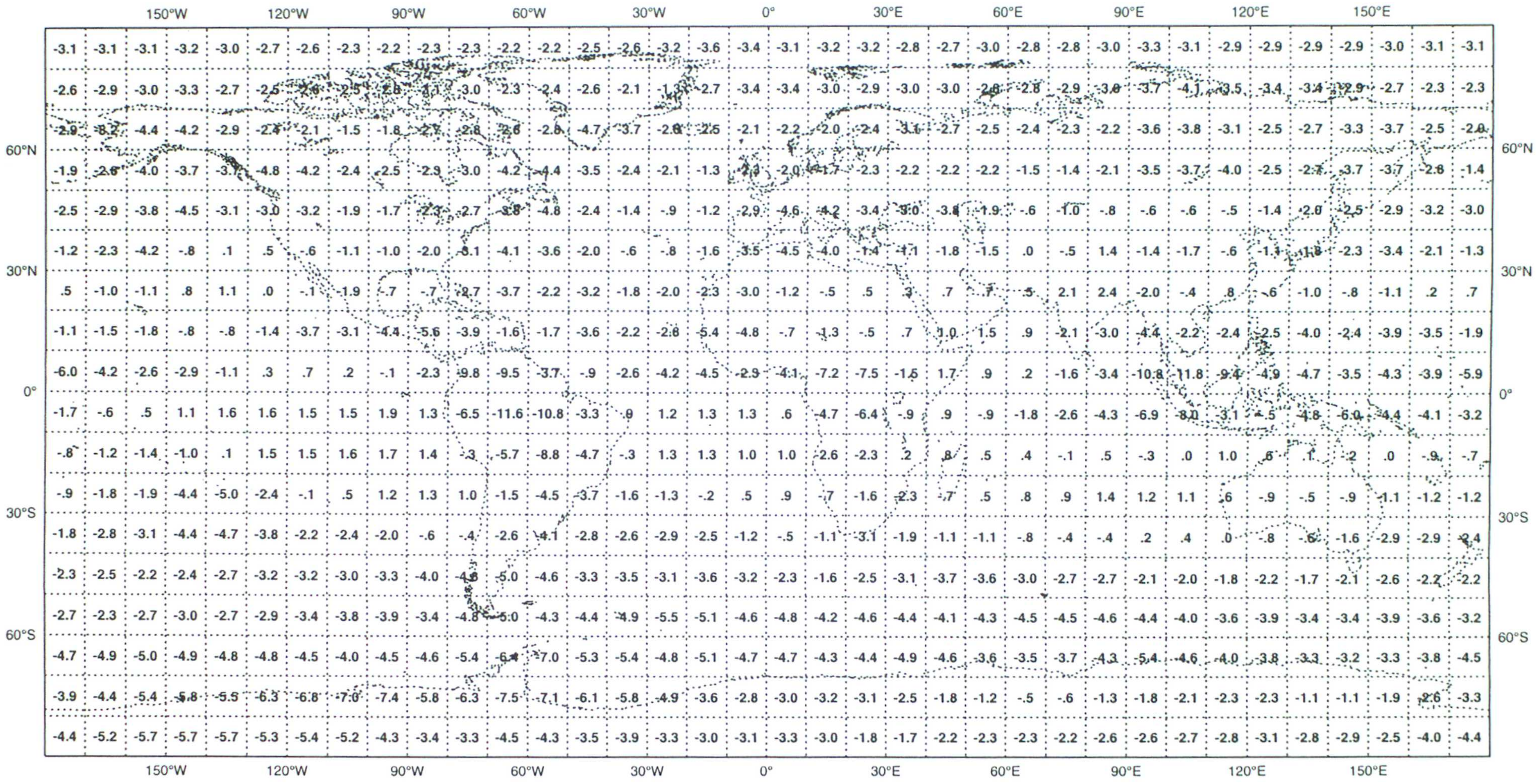
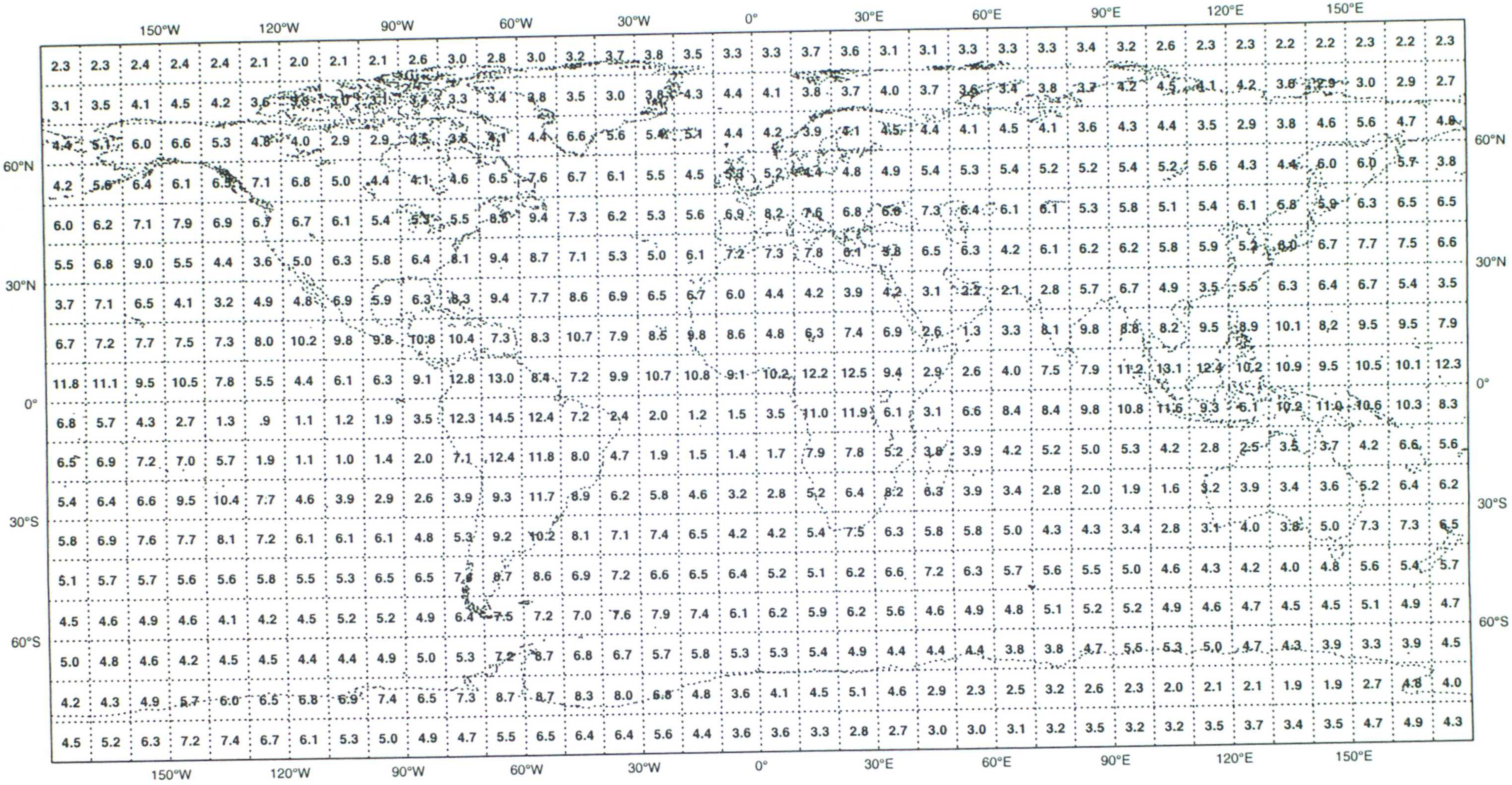
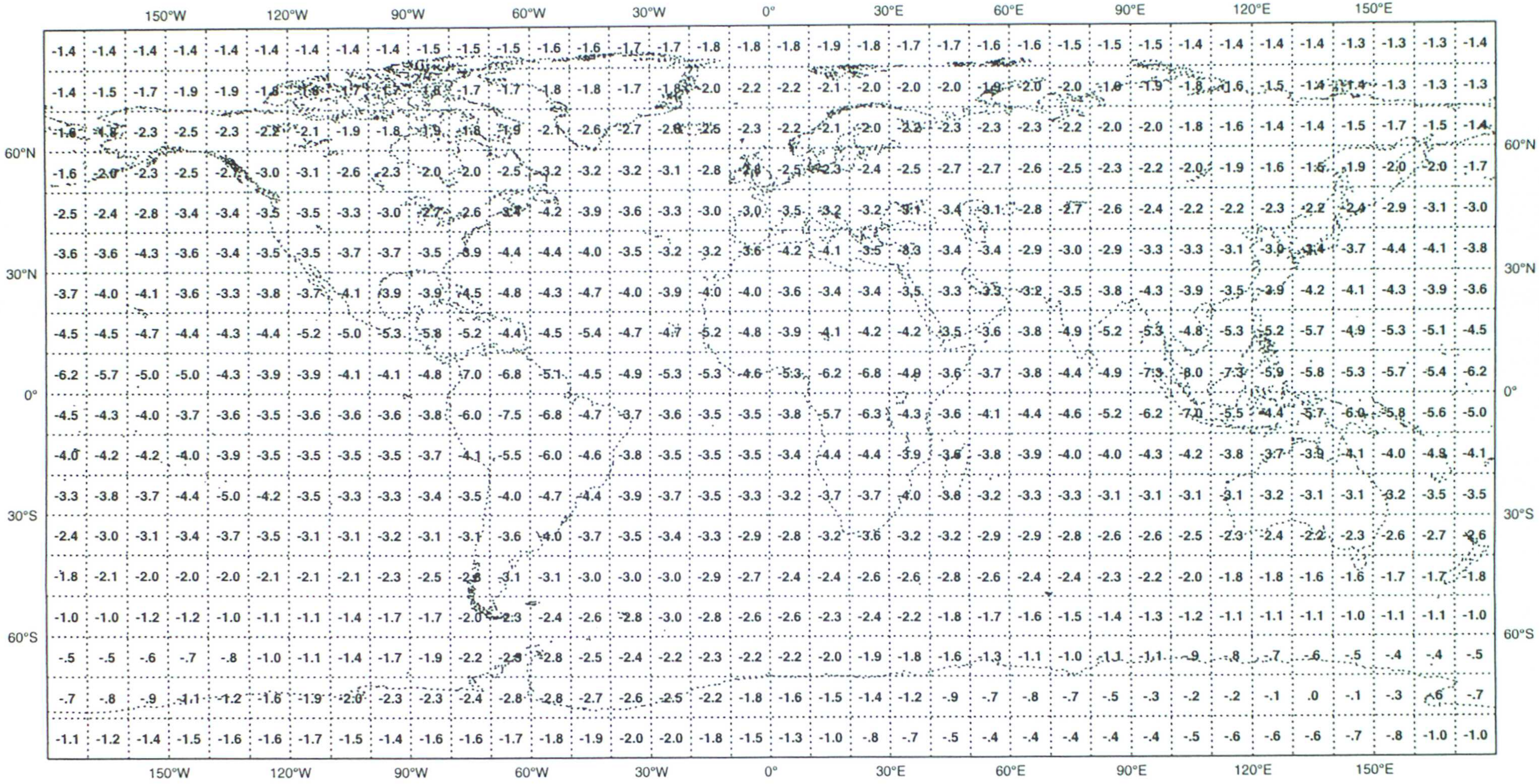

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
-3.1 -3.1 -3.1 -3.2 -3.0 -2.7 -2.6 -2.3 -2.2 -2.3 -2.3 -2.2 -2.2 -2.5 -2.6 -3.2 -3.6 -3.4 -3.1 -3.2 -3.2 -2.8 -2.7 -3.0 -2.8 -2.8 -3.0 -3.3 -3.1 -2.9 -2.9 -2.9 -2.9 -3.0 -3.1 -3.1
-2.6 -2.9 -3.0 -3.3 -2.7 -2.5 -2.6 -2.5 -2.8 -3.1 -3.0 -2.3 -2.4 -2.6 -2.1 -1.3 -2.7 -3.4 -3.4 -3.0 -2.9 -3.0 -3.0 -2.8 -2.8 -2.9 -3.0 -3.7 -4.1 -3.5 -3.4 -3.4 -2.9 -2.7 -2.3 -2.3
-2.9 -3.2 -4.4 -4.2 -2.9 -2.4 -2.1 -1.5 -1.8 -2.7 -2.8 -2.6 -2.8 -4.7 -3.7 -2.8 -2.5 -2.1 -2.2 -2.0 -2.4 -3.1 -2.7 -2.5 -2.4 -2.3 -2.2 -3.6 -3.8 -3.1 -2.5 -2.7 -3.3 -3.7 -2.5 -2.0
-1.9 -2.6 -4.0 -3.7 -3.7 -4.8 -4.2 -2.4 -2.5 -2.9 -3.0 -4.2 -4.4 -3.5 -2.4 -2.1 -1.3 -2.3 -2.0 -1.7 -2.3 -2.2 -2.2 -2.2 -1.5 -1.4 -2.1 -3.5 -3.7 -4.0 -2.5 -2.7 -3.7 -3.7 -2.8 -1.4
-2.5 -2.9 -3.8 -4.5 -3.1 -3.0 -3.2 -1.9 -1.7 -2.3 -2.7 -3.8 -4.8 -2.4 -1.4 -.9 -1.2 -2.9 -4.6 -4.2 -3.4 -3.0 -3.8 -1.9 -.6 -1.0 -.8 -.6 -.6 -.5 -1.4 -2.0 -2.5 -2.9 -3.2 -3.0
-1.2 -2.3 -4.2 -.8 .1 .5 -.6 -1.1 -1.0 -2.0 -3.1 -4.1 -3.6 -2.0 -.6 -.8 -1.6 -3.5 -4.5 -4.0 -1.4 -1.1 -1.8 -1.5 .0 -.5 1.4 -1.4 -1.7 -.6 -1.1 -1.8 -2.3 -3.4 -2.1 -1.3
.5 -1.0 -1.1 .8 1.1 .0 -.1 -1.9 -.7 -.7 -2.7 -3.7 -2.2 -3.2 -1.8 -2.0 -2.3 -3.0 -1.2 -.5 .5 .3 .7 .7 .5 2.1 2.4 -2.0 -.4 .8 -.6 -1.0 -.8 -1.1 .2 .7
-1.1 -1.5 -1.8 -.8 -.8 -1.4 -3.7 -3.1 -4.4 -5.6 -3.9 -1.6 -1.7 -3.6 -2.2 -2.8 -5.4 -4.8 -.7 -1.3 -.5 .7 1.0 1.5 .9 -2.1 -3.0 -4.4 -2.2 -2.4 -2.5 -4.0 -2.4 -3.9 -3.5 -1.9
-6.0 -4.2 -2.6 -2.9 -1.1 .3 .7 .2 -.1 -2.3 -9.8 -9.5 -3.7 -.9 -2.6 -4.2 -4.5 -2.9 -4.1 -7.2 -7.5 -1.6 1.7 .9 .2 -1.6 -3.4 -10.8 -11.8 -9.4 -4.9 -4.7 -3.5 -4.3 -3.9 -5.9
-1.7 -.6 .5 1.1 1.6 1.6 1.5 1.5 1.9 1.3 -6.5 -11.6 -10.8 -3.3 .9 1.2 1.3 1.3 .6 -4.7 -6.4 -.9 .9 -.9 -1.8 -2.6 -4.3 -6.9 -8.0 -3.1 -.5 -4.8 -6.0 -4.4 -4.1 -3.2
-.8 -1.2 -1.4 -1.0 .1 1.5 1.5 1.6 1.7 1.4 -.3 -5.7 -8.8 -4.7 -.3 1.3 1.3 1.0 1.0 -2.6 -2.3 .2 .8 .5 .4 -.1 .5 -.3 .0 1.0 .6 .1 -.2 .0 -.9 -.7
-.9 -1.8 -1.9 -4.4 -5.0 -2.4 -.1 .5 1.2 1.3 1.0 -1.5 -4.5 -3.7 -1.6 -1.3 -.2 .5 .9 -.7 -1.6 -2.3 -.7 .5 .8 .9 1.4 1.2 1.1 .6 -.9 -.5 -.9 -1.1 -1.2 -1.2
-1.8 -2.8 -3.1 -4.4 -4.7 -3.8 -2.2 -2.4 -2.0 -.6 -.4 -2.6 -4.1 -2.8 -2.6 -2.9 -2.5 -1.2 -.5 -1.1 -3.1 -1.9 -1.1 -1.1 -.8 -.4 -.4 .2 .4 .0 -.8 -.6 -1.6 -2.9 -2.9 -2.4
-2.3 -2.5 -2.2 -2.4 -2.7 -3.2 -3.2 -3.0 -3.3 -4.0 -4.8 -5.0 -4.6 -3.3 -3.5 -3.1 -3.6 -3.2 -2.3 -1.6 -2.5 -3.1 -3.7 -3.6 -3.0 -2.7 -2.7 -2.1 -2.0 -1.8 -2.2 -1.7 -2.1 -2.6 -2.2 -2.2
-2.7 -2.3 -2.7 -3.0 -2.7 -2.9 -3.4 -3.8 -3.9 -3.4 -4.8 -5.0 -4.3 -4.4 -4.9 -5.5 -5.1 -4.6 -4.8 -4.2 -4.6 -4.4 -4.1 -4.3 -4.5 -4.5 -4.6 -4.4 -4.0 -3.6 -3.9 -3.4 -3.4 -3.9 -3.6 -3.2
-4.7 -4.9 -5.0 -4.9 -4.8 -4.8 -4.5 -4.0 -4.5 -4.6 -5.4 -6.4 -7.0 -5.3 -5.4 -4.8 -5.1 -4.7 -4.7 -4.3 -4.4 -4.9 -4.6 -3.6 -3.5 -3.7 -4.3 -5.4 -4.6 -4.0 -3.8 -3.3 -3.2 -3.3 -3.8 -4.5
-3.9 -4.4 -5.4 -5.8 -5.5 -6.3 -6.8 -7.0 -7.4 -5.8 -6.3 -7.5 -7.1 -6.1 -5.8 -4.9 -3.6 -2.8 -3.0 -3.2 -3.1 -2.5 -1.8 -1.2 -.5 -.6 -1.3 -1.8 -2.1 -2.3 -2.3 -1.1 -1.1 -1.9 -2.6 -3.3
-4.4 -5.2 -5.7 -5.7 -5.7 -5.3 -5.4 -5.2 -4.3 -3.4 -3.3 -4.5 -4.3 -3.5 -3.9 -3.3 -3.0 -3.1 -3.3 -3.0 -1.8 -1.7 -2.2 -2.3 -2.3 -2.2 -2.6 -2.6 -2.7 -2.8 -3.1 -2.8 -2.9 -2.5 -4.0 -4.4

Figure 61. ATOVS SD O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS11 (500 - 700 hPa)
NOAA17, using all observations



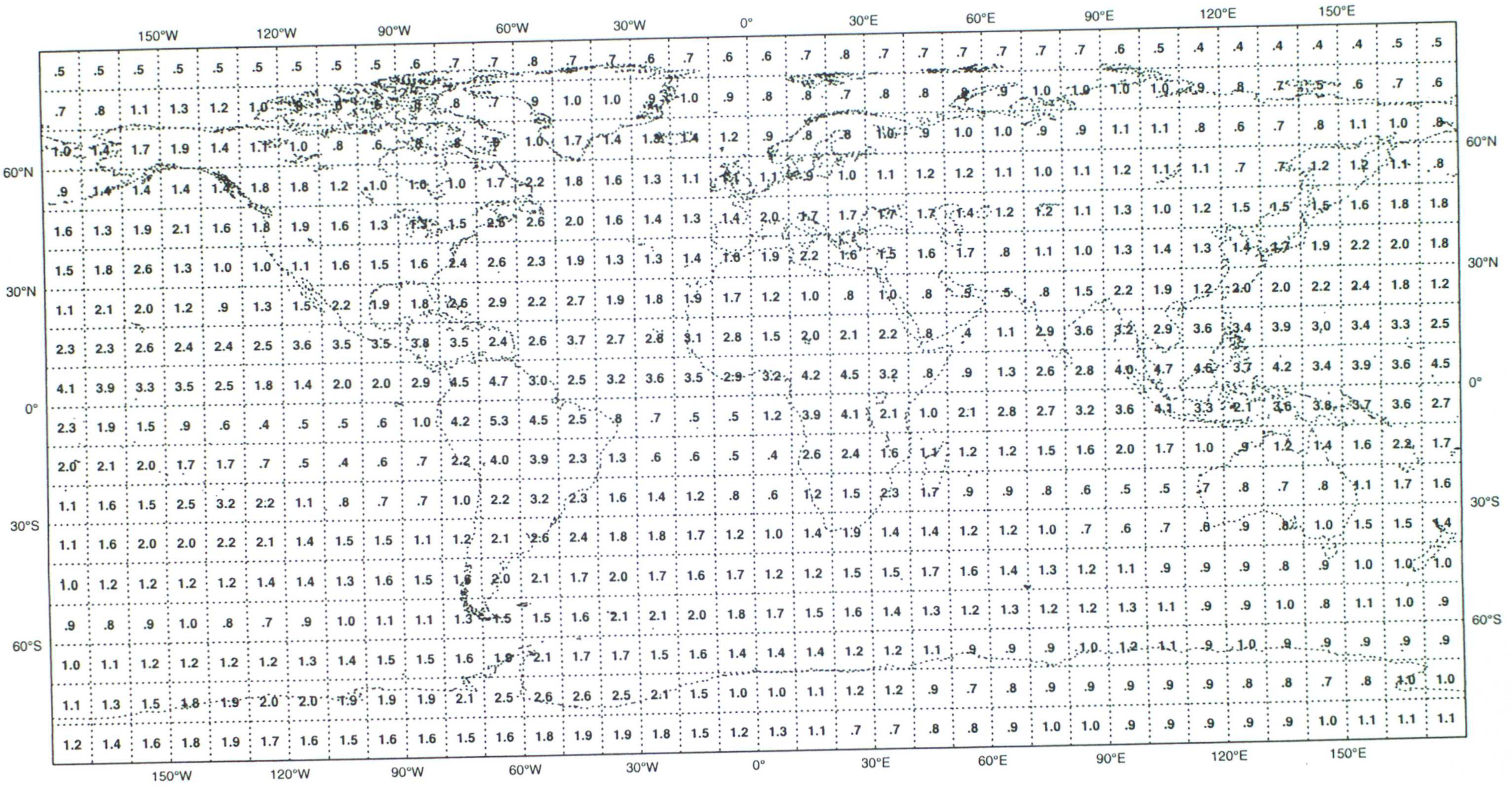
2.3	2.3	2.4	2.4	2.4	2.1	2.0	2.1	2.1	2.6	3.0	2.8	3.0	3.2	3.7	3.8	3.5	3.3	3.3	3.7	3.6	3.1	3.1	3.3	3.3	3.3	3.4	3.2	2.6	2.3	2.3	2.2	2.2	2.3	2.2	2.3
3.1	3.5	4.1	4.5	4.2	3.6	3.6	3.0	3.1	3.4	3.3	3.4	3.8	3.5	3.0	3.8	4.3	4.4	4.1	3.8	3.7	4.0	3.7	3.6	3.4	3.8	3.7	4.2	4.5	4.1	4.2	3.6	2.9	3.0	2.9	2.7
4.4	5.1	6.0	6.6	5.3	4.8	4.0	2.9	2.9	3.5	3.6	4.1	4.4	6.6	5.6	5.4	5.1	4.4	4.2	3.9	4.1	4.5	4.4	4.1	4.5	4.1	3.6	4.3	4.4	3.5	2.9	3.8	4.6	5.6	4.7	4.8
4.2	5.6	6.4	6.1	6.5	7.1	6.8	5.0	4.4	4.1	4.6	6.5	7.6	6.7	6.1	5.5	4.5	5.3	5.2	4.4	4.8	4.9	5.4	5.3	5.4	5.2	5.2	5.4	5.2	5.6	4.3	4.4	6.0	6.0	5.7	3.8
6.0	6.2	7.1	7.9	6.9	6.7	6.7	6.1	5.4	5.3	5.5	8.6	9.4	7.3	6.2	5.3	5.6	6.9	8.2	7.6	6.8	6.8	7.3	6.4	6.1	6.1	5.3	5.8	5.1	5.4	6.1	6.8	5.9	6.3	6.5	6.5
5.5	6.8	9.0	5.5	4.4	3.6	5.0	6.3	5.8	6.4	8.1	9.4	8.7	7.1	5.3	5.0	6.1	7.2	7.3	7.8	6.1	5.8	6.5	6.3	4.2	6.1	6.2	6.2	5.8	5.9	5.2	8.0	6.7	7.7	7.5	6.6
3.7	7.1	6.5	4.1	3.2	4.9	4.8	6.9	5.9	6.3	8.3	9.4	7.7	8.6	6.9	6.5	6.7	6.0	4.4	4.2	3.9	4.2	3.1	2.2	2.1	2.8	5.7	6.7	4.9	3.5	5.5	6.3	6.4	6.7	5.4	3.5
6.7	7.2	7.7	7.5	7.3	8.0	10.2	9.8	9.8	10.8	10.4	7.3	8.3	10.7	7.9	8.5	9.8	8.6	4.8	6.3	7.4	6.9	2.6	1.3	3.3	8.1	9.8	8.8	8.2	9.5	8.9	10.1	8.2	9.5	9.5	7.9
11.8	11.1	9.5	10.5	7.8	5.5	4.4	6.1	6.3	9.1	12.8	13.0	8.4	7.2	9.9	10.7	10.8	9.1	10.2	12.2	12.5	9.4	2.9	2.6	4.0	7.5	7.9	11.2	13.1	12.4	10.2	10.9	9.5	10.5	10.1	12.3
6.8	5.7	4.3	2.7	1.3	.9	1.1	1.2	1.9	3.5	12.3	14.5	12.4	7.2	2.4	2.0	1.2	1.5	3.5	11.0	11.9	6.1	3.1	6.6	8.4	8.4	9.8	10.8	11.6	9.3	6.1	10.2	11.0	10.6	10.3	8.3
6.5	6.9	7.2	7.0	5.7	1.9	1.1	1.0	1.4	2.0	7.1	12.4	11.8	8.0	4.7	1.9	1.5	1.4	1.7	7.9	7.8	5.2	3.8	3.9	4.2	5.2	5.0	5.3	4.2	2.8	2.5	3.5	3.7	4.2	6.6	5.6
5.4	6.4	6.6	9.5	10.4	7.7	4.6	3.9	2.9	2.6	3.9	9.3	11.7	8.9	6.2	5.8	4.6	3.2	2.8	5.2	6.4	8.2	6.3	3.9	3.4	2.8	2.0	1.9	1.6	3.2	3.9	3.4	3.6	5.2	6.4	6.2
5.8	6.9	7.6	7.7	8.1	7.2	6.1	6.1	6.1	4.8	5.3	9.2	10.2	8.1	7.1	7.4	6.5	4.2	4.2	5.4	7.5	6.3	5.8	5.8	5.0	4.3	4.3	3.4	2.8	3.1	4.0	3.8	5.0	7.3	7.3	6.5
5.1	5.7	5.7	5.6	5.6	5.8	5.5	5.3	6.5	6.5	7.6	8.7	8.6	6.9	7.2	6.6	6.5	6.4	5.2	5.1	6.2	6.6	7.2	6.3	5.7	5.6	5.5	5.0	4.6	4.3	4.2	4.0	4.8	5.6	5.4	5.7
4.5	4.6	4.9	4.6	4.1	4.2	4.5	5.2	5.2	4.9	6.4	7.5	7.2	7.0	7.6	7.9	7.4	6.1	6.2	5.9	6.2	5.6	4.6	4.9	4.8	5.1	5.2	5.2	4.9	4.6	4.7	4.5	4.5	5.1	4.9	4.7
5.0	4.8	4.6	4.2	4.5	4.5	4.4	4.4	4.9	5.0	5.3	7.2	8.7	6.8	6.7	5.7	5.8	5.3	5.3	5.4	4.9	4.4	4.4	4.4	3.8	3.8	4.7	5.6	5.3	5.0	4.7	4.3	3.9	3.3	3.9	4.5
4.2	4.3	4.9	5.7	6.0	6.5	6.8	6.9	7.4	6.5	7.3	8.7	8.7	8.3	8.0	6.8	4.8	3.6	4.1	4.5	5.1	4.6	2.9	2.3	2.5	3.2	2.6	2.3	2.0	2.1	2.1	1.9	1.9	2.7	4.8	4.0
4.5	5.2	6.3	7.2	7.4	6.7	6.1	5.3	5.0	4.9	4.7	5.5	6.5	6.4	6.4	5.6	4.4	3.6	3.6	3.3	2.8	2.7	3.0	3.0	3.1	3.2	3.5	3.2	3.2	3.5	3.7	3.4	3.5	4.7	4.9	4.3

Figure 62. ATOVS MEAN O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS4 (400 hPa)
NOAA17, using all observations



-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.5	-1.5	-1.5	-1.6	-1.6	-1.7	-1.7	-1.8	-1.8	-1.8	-1.9	-1.8	-1.7	-1.7	-1.6	-1.6	-1.5	-1.5	-1.5	-1.4	-1.4	-1.4	-1.4	-1.3	-1.3	-1.3	-1.4
-1.4	-1.5	-1.7	-1.9	-1.9	-1.8	-1.8	-1.7	-1.7	-1.8	-1.7	-1.7	-1.8	-1.8	-1.7	-1.8	-2.0	-2.2	-2.2	-2.1	-2.0	-2.0	-2.0	-1.9	-2.0	-2.0	-1.8	-1.9	-1.8	-1.6	-1.5	-1.4	-1.4	-1.3	-1.3	-1.3
-1.6	-1.8	-2.3	-2.5	-2.3	-2.2	-2.1	-1.9	-1.8	-1.9	-1.8	-1.9	-2.1	-2.6	-2.7	-2.8	-2.5	-2.3	-2.2	-2.1	-2.0	-2.2	-2.3	-2.3	-2.3	-2.2	-2.0	-2.0	-1.8	-1.6	-1.4	-1.4	-1.5	-1.7	-1.5	-1.4
-1.6	-2.0	-2.3	-2.5	-2.7	-3.0	-3.1	-2.6	-2.3	-2.0	-2.0	-2.5	-3.2	-3.2	-3.2	-3.1	-2.8	-2.8	-2.5	-2.3	-2.4	-2.5	-2.7	-2.7	-2.6	-2.5	-2.3	-2.2	-2.0	-1.9	-1.6	-1.5	-1.9	-2.0	-2.0	-1.7
-2.5	-2.4	-2.8	-3.4	-3.4	-3.5	-3.5	-3.3	-3.0	-2.7	-2.6	-3.4	-4.2	-3.9	-3.6	-3.3	-3.0	-3.0	-3.5	-3.2	-3.2	-3.1	-3.4	-3.1	-2.8	-2.7	-2.6	-2.4	-2.2	-2.2	-2.3	-2.2	-2.4	-2.9	-3.1	-3.0
-3.6	-3.6	-4.3	-3.6	-3.4	-3.5	-3.5	-3.7	-3.7	-3.5	-3.9	-4.4	-4.4	-4.0	-3.5	-3.2	-3.2	-3.6	-4.2	-4.1	-3.5	-3.3	-3.4	-3.4	-2.9	-3.0	-2.9	-3.3	-3.3	-3.1	-3.0	-3.4	-3.7	-4.4	-4.1	-3.8
-3.7	-4.0	-4.1	-3.6	-3.3	-3.8	-3.7	-4.1	-3.9	-3.9	-4.5	-4.8	-4.3	-4.7	-4.0	-3.9	-4.0	-4.0	-3.6	-3.4	-3.4	-3.5	-3.3	-3.3	-3.2	-3.5	-3.8	-4.3	-3.9	-3.5	-3.9	-4.2	-4.1	-4.3	-3.9	-3.6
-4.5	-4.5	-4.7	-4.4	-4.3	-4.4	-5.2	-5.0	-5.3	-5.8	-5.2	-4.4	-4.5	-5.4	-4.7	-4.7	-5.2	-4.8	-3.9	-4.1	-4.2	-4.2	-3.5	-3.6	-3.8	-4.9	-5.2	-5.3	-4.8	-5.3	-5.2	-5.7	-4.9	-5.3	-5.1	-4.5
-6.2	-5.7	-5.0	-5.0	-4.3	-3.9	-3.9	-4.1	-4.1	-4.8	-7.0	-6.8	-5.1	-4.5	-4.9	-5.3	-5.3	-4.6	-5.3	-6.2	-6.8	-4.9	-3.6	-3.7	-3.8	-4.4	-4.9	-7.3	-8.0	-7.3	-5.9	-5.8	-5.3	-5.7	-5.4	-6.2
-4.5	-4.3	-4.0	-3.7	-3.6	-3.5	-3.6	-3.6	-3.6	-3.8	-6.0	-7.5	-6.8	-4.7	-3.7	-3.6	-3.5	-3.5	-3.8	-5.7	-6.3	-4.3	-3.6	-4.1	-4.4	-4.6	-5.2	-6.2	-7.0	-5.5	-4.4	-5.7	-6.0	-5.8	-5.6	-5.0
-4.0	-4.2	-4.2	-4.0	-3.9	-3.5	-3.5	-3.5	-3.5	-3.7	-4.1	-5.5	-6.0	-4.6	-3.8	-3.5	-3.5	-3.5	-3.4	-4.4	-4.4	-3.9	-3.6	-3.8	-3.9	-4.0	-4.0	-4.3	-4.2	-3.8	-3.7	-3.9	-4.1	-4.0	-4.8	-4.1
-3.3	-3.8	-3.7	-4.4	-5.0	-4.2	-3.5	-3.3	-3.3	-3.4	-3.5	-4.0	-4.7	-4.4	-3.9	-3.7	-3.5	-3.3	-3.2	-3.7	-3.7	-4.0	-3.8	-3.2	-3.3	-3.3	-3.1	-3.1	-3.1	-3.1	-3.2	-3.1	-3.1	-3.2	-3.5	-3.5
-2.4	-3.0	-3.1	-3.4	-3.7	-3.5	-3.1	-3.1	-3.2	-3.1	-3.1	-3.6	-4.0	-3.7	-3.5	-3.4	-3.3	-2.9	-2.8	-3.2	-3.6	-3.2	-3.2	-2.9	-2.9	-2.8	-2.6	-2.6	-2.5	-2.3	-2.4	-2.2	-2.3	-2.6	-2.7	-2.6
-1.8	-2.1	-2.0	-2.0	-2.0	-2.1	-2.1	-2.1	-2.3	-2.5	-2.8	-3.1	-3.1	-3.0	-3.0	-3.0	-2.9	-2.7	-2.4	-2.4	-2.6	-2.6	-2.8	-2.6	-2.4	-2.4	-2.3	-2.2	-2.0	-1.8	-1.8	-1.6	-1.6	-1.7	-1.7	-1.8
-1.0	-1.0	-1.2	-1.2	-1.0	-1.1	-1.1	-1.4	-1.7	-1.7	-2.0	-2.3	-2.4	-2.6	-2.8	-3.0	-2.8	-2.6	-2.6	-2.3	-2.4	-2.2	-1.8	-1.7	-1.6	-1.5	-1.4	-1.3	-1.2	-1.1	-1.1	-1.1	-1.0	-1.1	-1.1	-1.0
-.5	-.5	-.6	-.7	-.8	-1.0	-1.1	-1.4	-1.7	-1.9	-2.2	-2.3	-2.8	-2.5	-2.4	-2.2	-2.3	-2.2	-2.2	-2.0	-1.9	-1.8	-1.6	-1.3	-1.1	-1.0	-1.1	-1.1	-.9	-.8	-.7	-.6	-.5	-.4	-.4	-.5
-.7	-.8	-.9	-1.1	-1.2	-1.6	-1.9	-2.0	-2.3	-2.3	-2.4	-2.8	-2.8	-2.7	-2.6	-2.5	-2.2	-1.8	-1.6	-1.5	-1.4	-1.2	-.9	-.7	-.8	-.7	-.5	-.3	-.2	-.2	-.1	.0	-.1	-.3	-.6	-.7
-1.1	-1.2	-1.4	-1.5	-1.6	-1.6	-1.7	-1.5	-1.4	-1.6	-1.6	-1.7	-1.8	-1.9	-2.0	-2.0	-1.8	-1.5	-1.3	-1.0	-.8	-.7	-.5	-.4	-.4	-.4	-.4	-.4	-.5	-.6	-.6	-.6	-.7	-.8	-1.0	-1.0

Figure 63. ATOVS SD O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: HIRS4 (400 hPa)
NOAA17, using all observations



.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.7	.7	.8	.7	.7	.6	.7	.6	.6	.7	.8	.7	.7	.7	.7	.7	.7	.6	.5	.4	.4	.4	.4	.4	.5	.5
.7	.8	1.1	1.3	1.2	1.0	.8	.6	.6	.8	.8	.7	.9	1.0	1.0	.9	1.0	.9	.8	.8	.7	.8	.8	.8	.9	1.0	1.0	1.0	1.0	.9	.8	.7	.5	.6	.7	.6
1.0	1.4	1.7	1.9	1.4	1.1	1.0	.8	.6	.8	.8	.9	1.0	1.7	1.4	1.8	1.4	1.2	.9	.8	.8	1.0	.9	1.0	1.0	.9	.9	1.1	1.1	.8	.6	.7	.8	1.1	1.0	.8
.9	1.4	1.4	1.4	1.4	1.8	1.8	1.2	1.0	1.0	1.0	1.7	2.2	1.8	1.6	1.3	1.1	1.1	1.1	.9	1.0	1.1	1.2	1.2	1.1	1.0	1.1	1.2	1.1	1.1	.7	.7	1.2	1.2	1.1	.8
1.6	1.3	1.9	2.1	1.6	1.8	1.9	1.6	1.3	1.3	1.5	2.5	2.6	2.0	1.6	1.4	1.3	1.4	2.0	1.7	1.7	1.7	1.7	1.4	1.2	1.2	1.1	1.3	1.0	1.2	1.5	1.5	1.5	1.6	1.8	1.8
1.5	1.8	2.6	1.3	1.0	1.0	1.1	1.6	1.5	1.6	2.4	2.6	2.3	1.9	1.3	1.3	1.4	1.6	1.9	2.2	1.6	1.5	1.6	1.7	.8	1.1	1.0	1.3	1.4	1.3	1.4	1.7	1.9	2.2	2.0	1.8
1.1	2.1	2.0	1.2	.9	1.3	1.5	2.2	1.9	1.8	2.6	2.9	2.2	2.7	1.9	1.8	1.9	1.7	1.2	1.0	.8	1.0	.8	.5	.5	.8	1.5	2.2	1.9	1.2	2.0	2.0	2.2	2.4	1.8	1.2
2.3	2.3	2.6	2.4	2.4	2.5	3.6	3.5	3.5	3.8	3.5	2.4	2.6	3.7	2.7	2.8	3.1	2.8	1.5	2.0	2.1	2.2	.8	.4	1.1	2.9	3.6	3.2	2.9	3.6	3.4	3.9	3.0	3.4	3.3	2.5
4.1	3.9	3.3	3.5	2.5	1.8	1.4	2.0	2.0	2.9	4.5	4.7	3.0	2.5	3.2	3.6	3.5	2.9	3.2	4.2	4.5	3.2	.8	.9	1.3	2.6	2.8	4.0	4.7	4.6	3.7	4.2	3.4	3.9	3.6	4.5
2.3	1.9	1.5	.9	.6	.4	.5	.5	.6	1.0	4.2	5.3	4.5	2.5	.8	.7	.5	.5	1.2	3.9	4.1	2.1	1.0	2.1	2.8	2.7	3.2	3.6	4.1	3.3	2.1	3.6	3.8	3.7	3.6	2.7
2.0	2.1	2.0	1.7	1.7	.7	.5	.4	.6	.7	2.2	4.0	3.9	2.3	1.3	.6	.6	.5	.4	2.6	2.4	1.6	1.1	1.2	1.2	1.5	1.6	2.0	1.7	1.0	.9	1.2	1.4	1.6	2.2	1.7
1.1	1.6	1.5	2.5	3.2	2.2	1.1	.8	.7	.7	1.0	2.2	3.2	2.3	1.6	1.4	1.2	.8	.6	1.2	1.5	2.3	1.7	.9	.9	.8	.6	.5	.5	.7	.8	.7	.8	1.1	1.7	1.6
1.1	1.6	2.0	2.0	2.2	2.1	1.4	1.5	1.5	1.1	1.2	2.1	2.6	2.4	1.8	1.8	1.7	1.2	1.0	1.4	1.9	1.4	1.4	1.2	1.2	1.0	.7	.6	.7	.8	.9	.8	1.0	1.5	1.5	1.4
1.0	1.2	1.2	1.2	1.2	1.4	1.4	1.3	1.6	1.5	1.6	2.0	2.1	1.7	2.0	1.7	1.6	1.7	1.2	1.2	1.5	1.5	1.7	1.6	1.4	1.3	1.2	1.1	.9	.9	.9	.8	.9	1.0	1.0	1.0
.9	.8	.9	1.0	.8	.7	.9	1.0	1.1	1.1	1.3	1.5	1.5	1.6	2.1	2.1	2.0	1.8	1.7	1.5	1.6	1.4	1.3	1.2	1.3	1.2	1.2	1.3	1.1	.9	.9	1.0	.8	1.1	1.0	.9
1.0	1.1	1.2	1.2	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.9	2.1	1.7	1.7	1.5	1.6	1.4	1.4	1.4	1.2	1.2	1.1	.9	.9	.9	1.0	1.2	1.1	.9	1.0	.9	.9	.9	.9	.9
1.1	1.3	1.5	1.8	1.9	2.0	2.0	1.9	1.9	1.9	2.1	2.5	2.6	2.6	2.5	2.1	1.5	1.0	1.0	1.1	1.2	1.2	.9	.7	.8	.9	.9	.9	.9	.9	.8	.8	.7	.8	1.0	1.0
1.2	1.4	1.6	1.8	1.9	1.7	1.6	1.5	1.6	1.6	1.5	1.6	1.8	1.9	1.9	1.8	1.5	1.2	1.3	1.1	.7	.7	.8	.8	.9	1.0	1.0	.9	.9	.9	.9	.9	1.0	1.1	1.1	1.1

Figure 64. ATOVS MEAN O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: AMSUA-5 (700 hPa)
NOAA17, using all observations

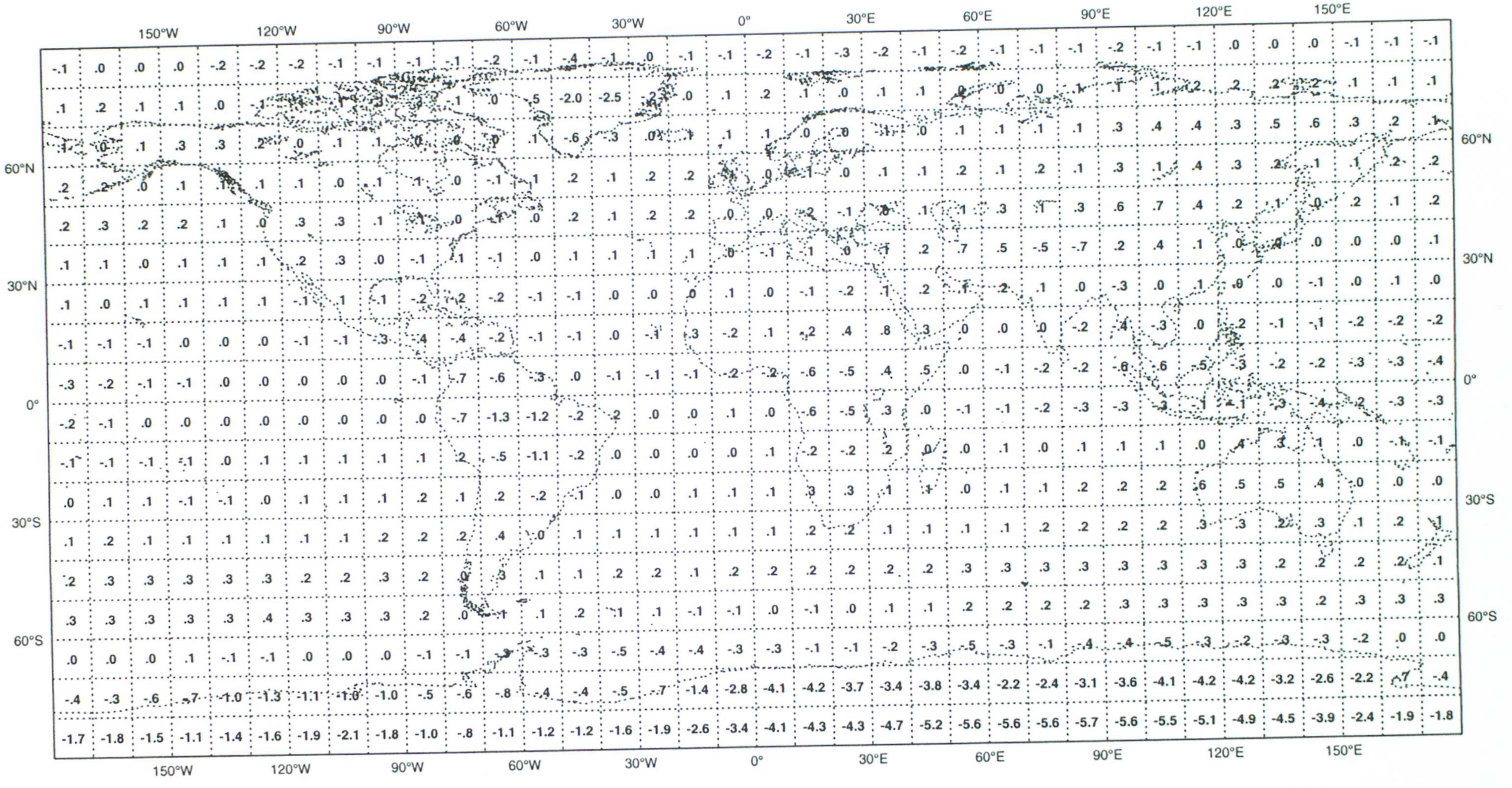
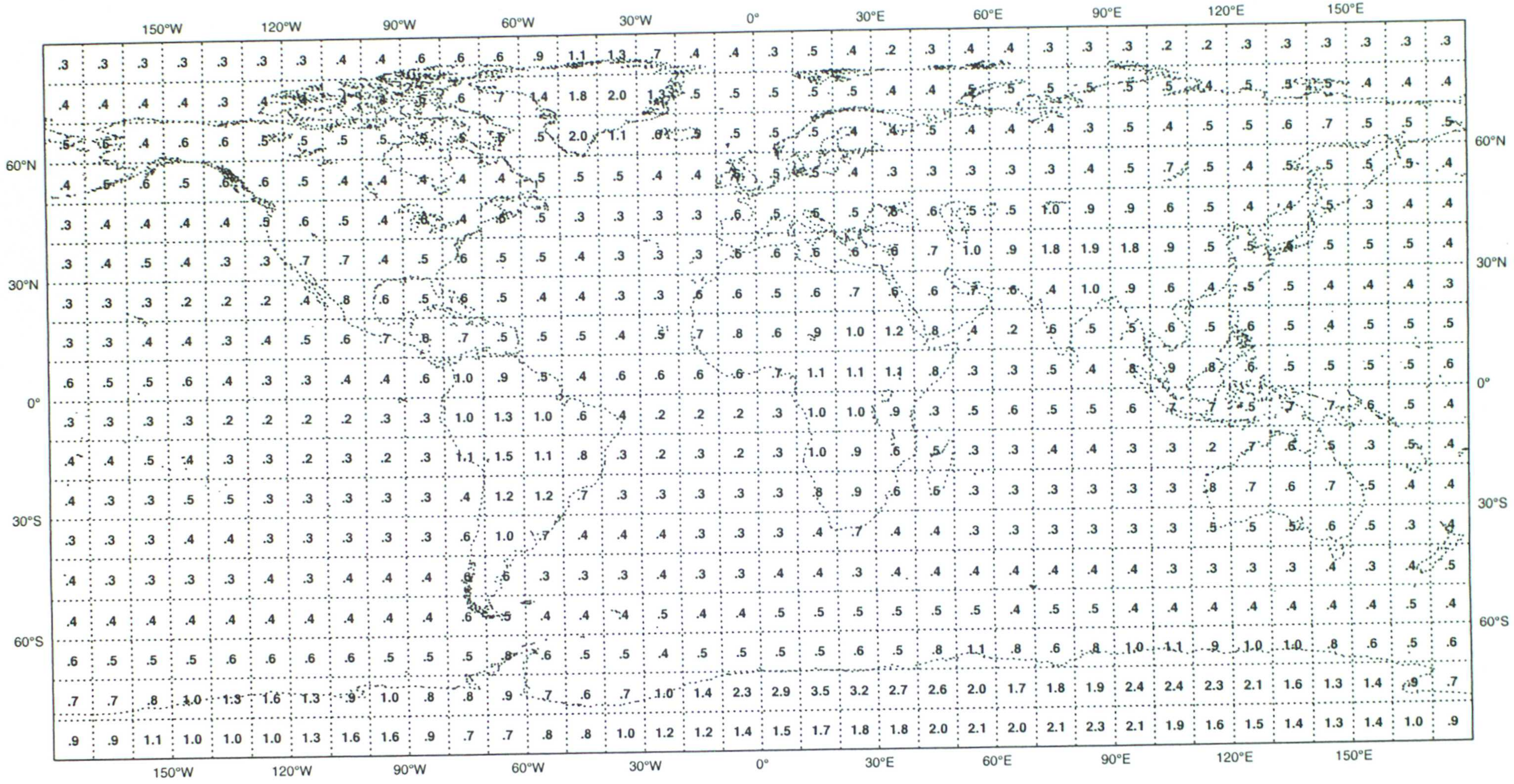

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
-.1 .0 .0 .0 -.2 -.2 -.2 -.1 -.1 -.1 -.1 -.2 -.1 -.4 -.1 .0 -.1 -.1 -.2 -.1 -.3 -.2 -.1 -.2 -.1 -.1 -.1 -.2 -.1 -.1 .0 .0 .0 -.1 -.1 -.1
.1 .2 .1 .1 .0 -.1 .1 .1 .3 .2 -.1 .0 .5 -2.0 -2.5 -.2 .0 .1 .2 .1 .0 .1 .1 .0 .0 .0 .1 .1 .1 .2 .2 .2 .2 .1 .1 .1
.1 .0 .1 .3 .3 .2 .0 .1 .1 .0 .0 .0 .1 -.6 -.3 .0 .1 .1 .1 .0 .0 -.1 .0 .1 .1 .1 .1 .3 .4 .4 .3 .5 .6 .3 .2 .1
.2 .2 .0 .1 .1 .1 .1 .0 .1 .1 .0 -.1 .1 .2 .1 .2 .2 .1 .0 -.1 .0 .1 .1 .2 .1 .2 .1 .3 .1 .4 .3 .2 .1 .1 .2 .2
.2 .3 .2 .2 .1 .0 .3 .3 .1 .1 .0 -.1 .0 .2 .1 .2 .2 .0 .0 -.2 -.1 .0 .1 .1 .3 .1 .3 .6 .7 .4 .2 .1 .0 .2 .1 .2
.1 .1 .0 .1 .1 .1 .2 .3 .0 -.1 .1 -.1 .0 .1 .1 .1 .1 .0 -.1 -.1 .0 .1 .2 .7 .5 -.5 -.7 .2 .4 .1 .0 .0 .0 .0 .0 .1
.1 .0 .1 .1 .1 .1 -.1 .1 -.1 -.2 -.2 -.2 -.1 -.1 .0 .0 .0 .1 .0 -.1 -.2 .1 .2 .1 .2 .1 .0 -.3 .0 .1 .0 .0 -.1 .0 .1 .0
-.1 -.1 -.1 .0 .0 .0 -.1 -.1 -.3 -.4 -.4 -.2 -.1 -.1 .0 -.1 .3 -.2 .1 .2 .4 .8 .3 .0 .0 .0 -.2 -.4 -.3 .0 -.2 -.1 -.1 -.2 -.2 -.2
-.3 -.2 -.1 -.1 .0 .0 .0 .0 .0 -.1 -.7 -.6 -.3 .0 -.1 -.1 -.1 -.2 -.2 -.6 -.5 .4 .5 .0 -.1 -.2 -.2 -.6 -.6 -.5 -.3 -.2 -.2 -.3 -.3 -.4
-.2 -.1 .0 .0 .0 .0 .0 .0 .0 .0 -.7 -1.3 -1.2 -.2 .2 .0 .0 .1 .0 -.6 -.5 .3 .0 -.1 -.1 -.2 -.3 -.3 -.3 -.1 -.1 -.3 -.4 -.2 -.3 -.3
-.1 -.1 -.1 -.1 .0 .1 .1 .1 .1 .1 .2 -.5 -1.1 -.2 .0 .0 .0 .0 .1 -.2 -.2 .2 .0 .0 .1 .0 .1 .1 .1 .0 .4 .3 .1 .0 -.1 -.1
.0 .1 .1 -.1 -.1 .0 .1 .1 .1 .2 .1 .2 -.2 -.1 .0 .0 .1 .1 .1 .3 .3 .1 .1 .0 .1 .1 .2 .2 .2 .6 .5 .5 .4 .0 .0 .0
.1 .2 .1 .1 .1 .1 .1 .1 .2 .2 .2 .4 .0 .1 .1 .1 .1 .1 .1 .2 .2 .1 .1 .1 .1 .2 .2 .2 .2 .3 .3 .2 .3 .1 .2 .1
.2 .3 .3 .3 .3 .3 .2 .2 .3 .2 .0 .3 .1 .1 .2 .2 .1 .2 .2 .2 .2 .2 .2 .3 .3 .3 .3 .3 .3 .3 .3 .2 .2 .2 .2 .1
.3 .3 .3 .3 .3 .4 .3 .3 .3 .2 .0 .1 .1 .2 .1 .1 -.1 -.1 .0 -.1 .0 .1 .1 .2 .2 .2 .2 .3 .3 .3 .3 .3 .2 .3 .3 .3
.0 .0 .0 .1 -.1 -.1 .0 .0 .0 -.1 -.1 -.3 -.3 -.3 -.5 -.4 -.4 -.3 -.3 -.1 -.1 -.2 -.3 -.5 -.3 -.1 -.4 -.4 -.5 -.3 -.2 -.3 -.3 -.2 .0 .0
-.4 -.3 -.6 -.7 -1.0 -1.3 -1.1 -1.0 -1.0 -.5 -.6 -.8 -.4 -.4 -.5 -.7 -1.4 -2.8 -4.1 -4.2 -3.7 -3.4 -3.8 -3.4 -2.2 -2.4 -3.1 -3.6 -4.1 -4.2 -4.2 -3.2 -2.6 -2.2 -.7 -.4
-1.7 -1.8 -1.5 -1.1 -1.4 -1.6 -1.9 -2.1 -1.8 -1.0 -.8 -1.1 -1.2 -1.2 -1.6 -1.9 -2.6 -3.4 -4.1 -4.3 -4.3 -4.7 -5.2 -5.6 -5.6 -5.6 -5.7 -5.6 -5.5 -5.1 -4.9 -4.5 -3.9 -2.4 -1.9 -1.8

Figure 65. ATOVS SD O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: AMSUA-5 (700 hPa)
NOAA17, using all observations



.3	.3	.3	.3	.3	.3	.3	.4	.4	.6	.6	.6	.9	1.1	1.3	.7	.4	.4	.3	.5	.4	.2	.3	.4	.4	.3	.3	.3	.2	.2	.3	.3	.3	.3	.3	.3
.4	.4	.4	.4	.3	.4	.4	.4	.3	.5	.6	.7	1.4	1.8	2.0	1.3	.5	.5	.5	.5	.5	.4	.4	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.4	.4	.4
.5	.6	.4	.6	.6	.5	.5	.5	.5	.5	.5	.5	.5	2.0	1.1	.6	.5	.5	.5	.5	.4	.4	.5	.4	.4	.4	.3	.5	.4	.5	.5	.6	.7	.5	.5	.5
.4	.5	.6	.5	.6	.6	.5	.4	.4	.4	.4	.4	.5	.5	.5	.4	.4	.5	.5	.5	.4	.3	.3	.3	.3	.3	.4	.5	.7	.5	.4	.5	.5	.5	.5	.4
.3	.4	.4	.4	.4	.5	.6	.5	.4	.6	.4	.6	.5	.3	.3	.3	.3	.6	.5	.6	.5	.8	.6	.5	.5	1.0	.9	.9	.6	.5	.4	.4	.5	.3	.4	.4
.3	.4	.5	.4	.3	.3	.7	.7	.4	.5	.6	.5	.5	.4	.3	.3	.3	.6	.6	.6	.6	.6	.7	1.0	.9	1.8	1.9	1.8	.9	.5	.5	.4	.5	.5	.5	.4
.3	.3	.3	.2	.2	.2	.4	.8	.6	.5	.6	.5	.4	.4	.3	.3	.6	.6	.5	.6	.7	.6	.6	.7	.6	.4	1.0	.9	.6	.4	.5	.5	.4	.4	.4	.3
.3	.3	.4	.4	.3	.4	.5	.6	.7	.8	.7	.5	.5	.5	.4	.5	.7	.8	.6	.9	1.0	1.2	.8	.4	.2	.6	.5	.5	.6	.5	.6	.5	.4	.5	.5	.5
.6	.5	.5	.6	.4	.3	.3	.4	.4	.6	1.0	.9	.5	.4	.6	.6	.6	.6	.7	1.1	1.1	1.1	.8	.3	.3	.5	.4	.8	.9	.8	.6	.5	.5	.5	.5	.6
.3	.3	.3	.3	.2	.2	.2	.2	.3	.3	1.0	1.3	1.0	.6	.4	.2	.2	.2	.3	1.0	1.0	.9	.3	.5	.6	.5	.5	.6	.7	.7	.5	.7	.7	.6	.5	.4
.4	.4	.5	.4	.3	.3	.2	.3	.2	.3	1.1	1.5	1.1	.8	.3	.2	.3	.2	.3	1.0	.9	.6	.5	.3	.3	.4	.4	.3	.3	.2	.7	.6	.5	.3	.5	.4
.4	.3	.3	.5	.5	.3	.3	.3	.3	.3	.4	1.2	1.2	.7	.3	.3	.3	.3	.3	.8	.9	.6	.6	.3	.3	.3	.3	.3	.3	.8	.7	.6	.7	.5	.4	.4
.3	.3	.3	.4	.4	.3	.3	.3	.3	.3	.6	1.0	.7	.4	.4	.4	.3	.3	.3	.4	.7	.4	.4	.3	.3	.3	.3	.3	.3	.5	.5	.5	.6	.5	.3	.4
.4	.3	.3	.3	.3	.4	.3	.4	.4	.4	.6	.6	.3	.3	.3	.4	.3	.3	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.4	.3	.4	.5
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.6	.5	.4	.4	.4	.5	.4	.4	.5	.5	.5	.5	.5	.5	.4	.5	.5	.4	.4	.4	.4	.4	.4	.4	.5	.4
.6	.5	.5	.5	.6	.6	.6	.6	.5	.5	.5	.8	.6	.5	.5	.4	.5	.5	.5	.5	.6	.5	.8	1.1	.8	.6	.8	1.0	1.1	.9	1.0	1.0	.8	.6	.5	.6
.7	.7	.8	1.0	1.3	1.6	1.3	.9	1.0	.8	.8	.9	.7	.6	.7	1.0	1.4	2.3	2.9	3.5	3.2	2.7	2.6	2.0	1.7	1.8	1.9	2.4	2.4	2.3	2.1	1.6	1.3	1.4	.9	.7
.9	.9	1.1	1.0	1.0	1.0	1.3	1.6	1.6	.9	.7	.7	.8	.8	1.0	1.2	1.2	1.4	1.5	1.7	1.8	1.8	2.0	2.1	2.0	2.1	2.3	2.1	1.9	1.6	1.5	1.4	1.3	1.4	1.0	.9

Figure 66. ATOVS MEAN O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: AMSUA-7 (300 hPa)
NOAA17, using all observations

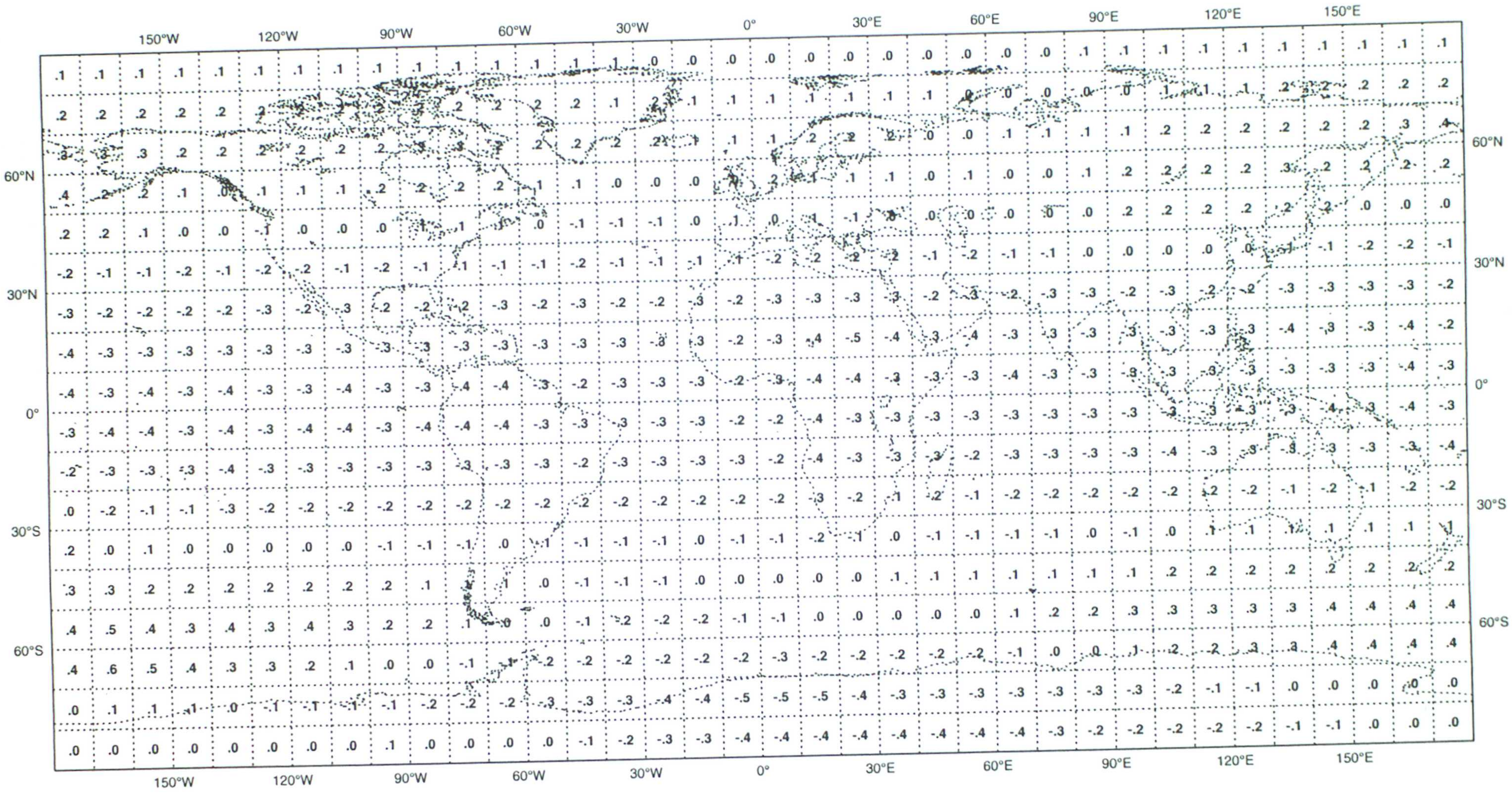

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 67. ATOVS SD O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: AMSUA-7 (300 hPa)
NOAA17, using all observations

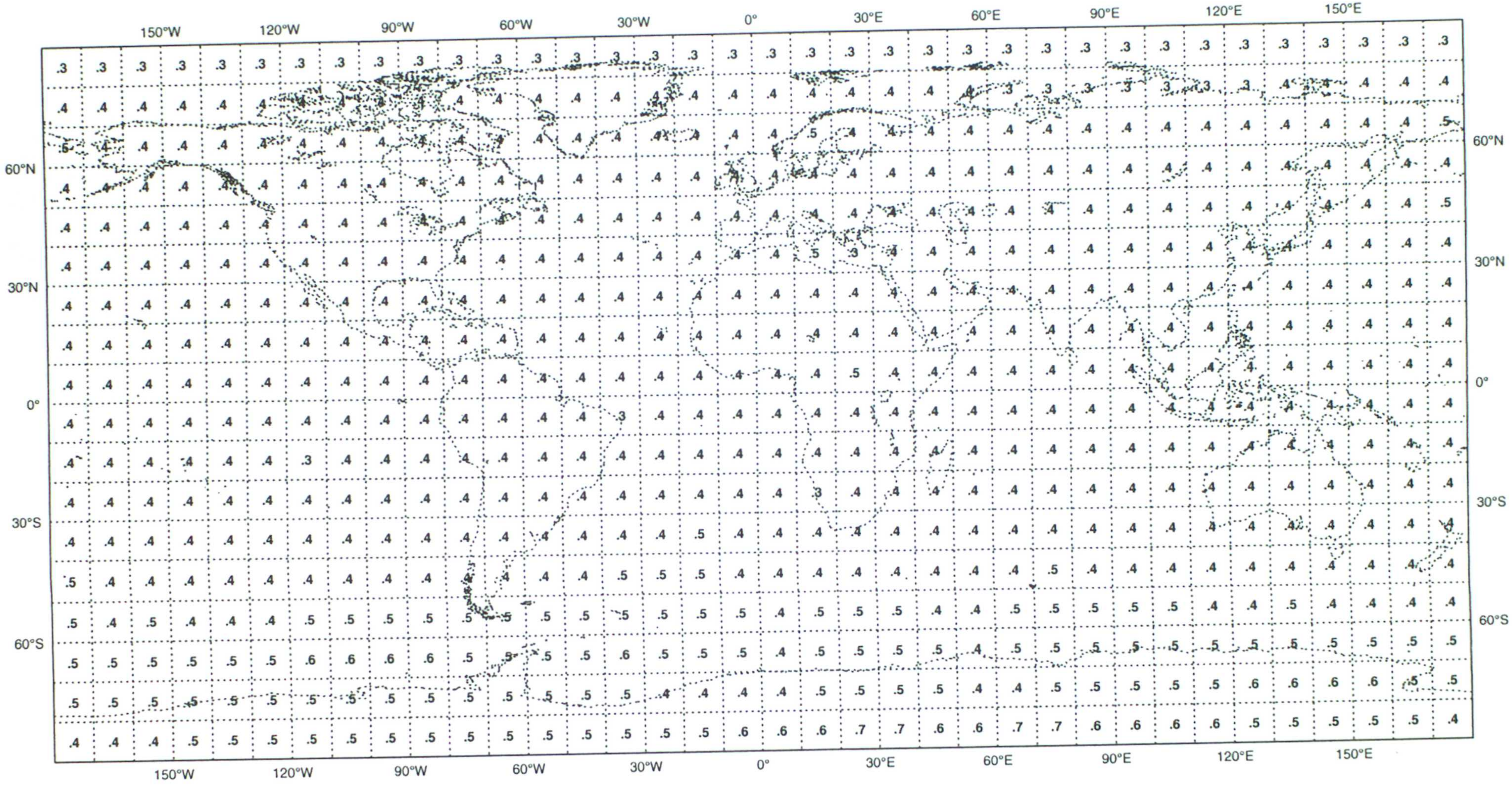

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4
.5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.5 .4 .5 .4 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5 .4 .4 .5 .5 .5 .5 .5 .4 .4 .5 .4 .4 .4 .4
.5 .5 .5 .5 .5 .5 .6 .6 .6 .6 .5 .5 .5 .5 .6 .5 .5 .5 .4 .5 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .4 .4 .5 .5 .5 .5 .4 .4 .5 .5 .5 .5 .5 .6 .6 .6 .6 .5 .5
.4 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .6 .6 .7 .7 .6 .6 .7 .7 .6 .6 .6 .6 .5 .5 .5 .5 .5 .4

Figure 68. ATOVS MEAN O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: AMSUA-9 (100 hPa)
NOAA17, using all observations

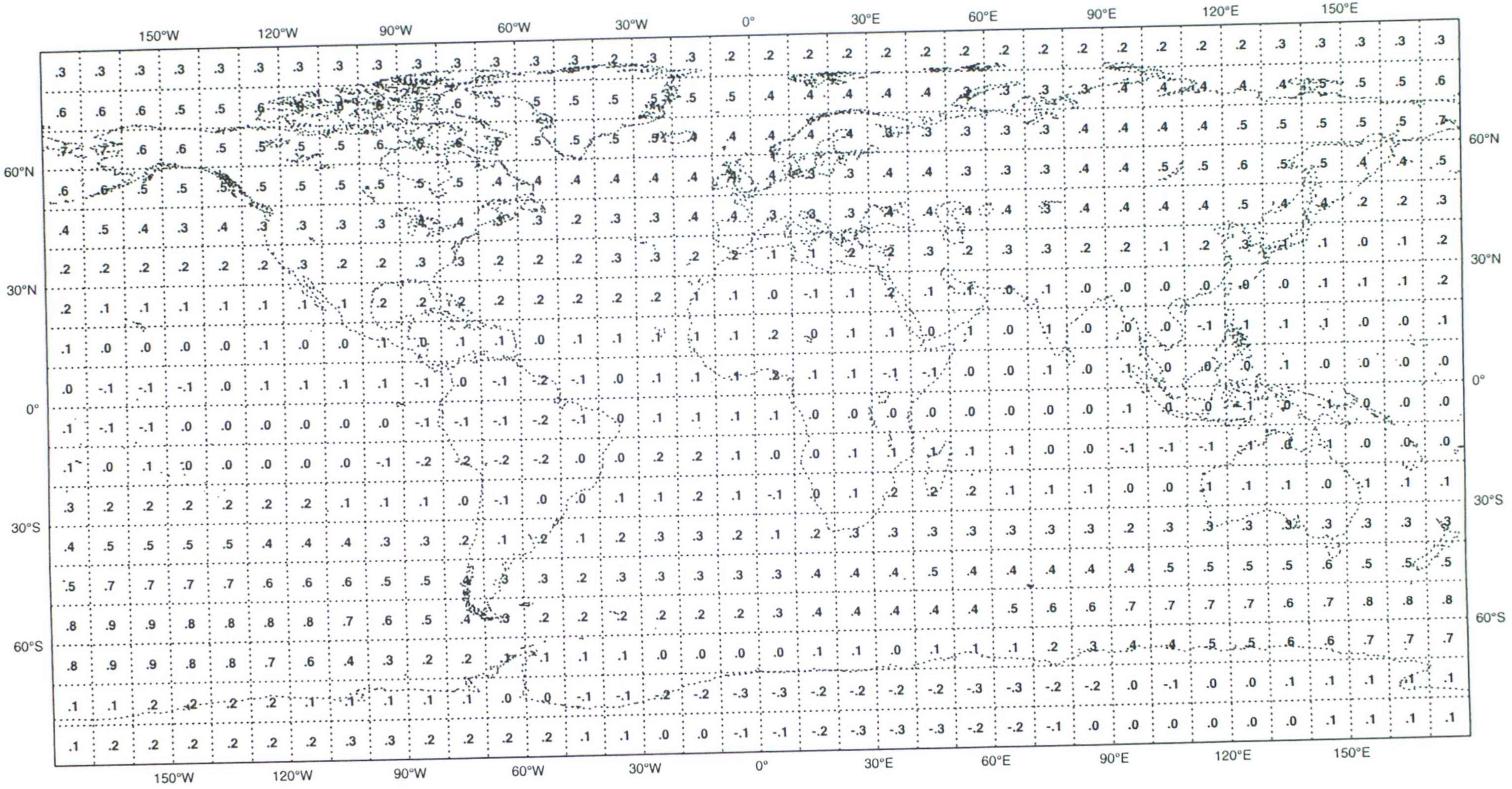

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 69. ATOVS SD O-B brightness temperature differences (deg C). OCTOBER 2003
Channel: AMSUA-9 (100 hPa)
NOAA17, using all observations

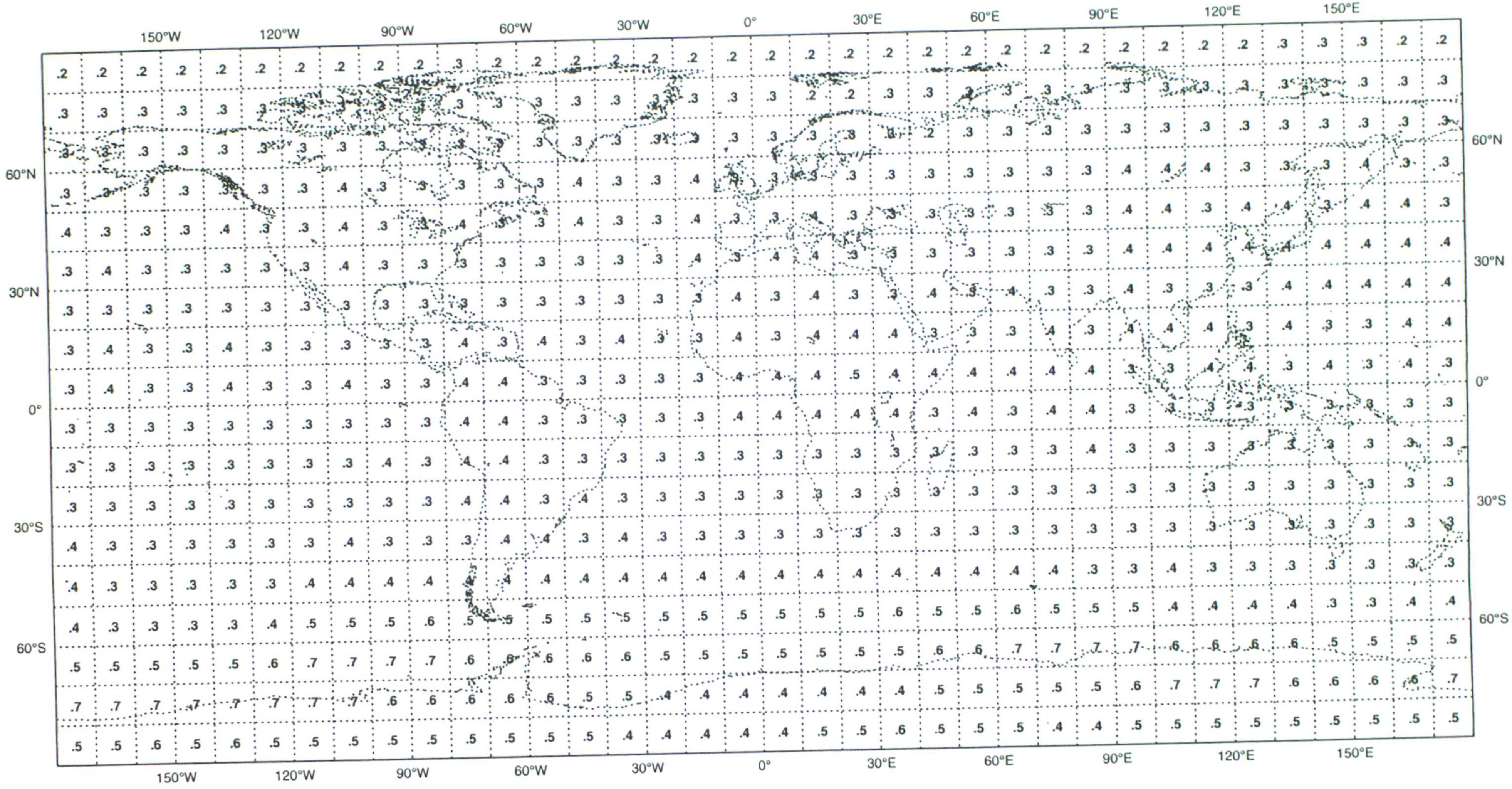

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: EXETER
MONTH: Oct 03

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for drifting buoy.

Area monitored :10°N - 80°N, 85°W - 0°W

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times :All hours combined.

Elements monitored
:Mean sea-level pressure (hPa)
:Wind speed ($m\ s^{-1}$)
:Wind direction (degrees)

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. A positive bias indicates the wind observation is veered to the background

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors

GROSS ERROR LIMITS
:15 hPa (pressure)
:25 $m\ s^{-1}$ (Vector Wind)

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
078870	37.4	-23.7	P	1	0	0	0.0	-2.3	2.3
086361	37.4	-26.1	P	1	0	0	0.0	-0.3	0.3
135576	36.4	-41.3	P	1	100	100			
13599	20.0	-34.9	P	413	1	8	2.7	0.9	2.9
13600	17.7	-31.3	P	733	0	28	0.6	0.5	0.8
13602	17.5	-33.8	P	524	0	0	0.6	0.2	0.6
178491	34.3	-52.6	P	1	0	0	0.0	-1.0	1.0
188390	33.8	-55.1	P	1	0	0	0.0	1.0	1.0
227201	30.7	-65.4	P	1	0	0	0.0	-1.9	1.9
236950	29.9	-67.4	P	1	0	0	0.0	1.0	1.0
41502	15.4	-73.6	P	1384	0	70	0.5	0.9	1.0
41503	23.8	-68.6	P	821	0	100	2.2	-0.5	2.2
41504	13.0	-61.9	P	1360	0	68	0.7	0.8	1.1
41521	16.0	-51.7	P	1389	0	100	0.7	-1.6	1.8
41522	22.2	-61.7	P	611	0	13	2.6	-0.1	2.6
41532	25.5	-70.3	P	608	0	1	0.8	0.4	0.9
41534	25.1	-64.9	P	694	0	15	0.6	0.2	0.6
41537	31.4	-62.1	P	642	0	5	0.6	0.5	0.8
41579	15.6	-60.7	P	554	0	1	0.6	0.6	0.9
41590	18.0	-61.2	P	608	0	0	0.5	0.9	1.0
41630	30.5	-73.0	P	544	0	0	0.6	0.9	1.1
41631	25.6	-74.9	P	507	0	1	0.6	0.3	0.7
41645	26.4	-78.6	P	555	0	1	0.6	0.9	1.1
41646	24.5	-72.4	P	533	0	1	0.7	0.2	0.7
41647	21.4	-73.9	P	578	0	1	0.6	0.4	0.7
41655	22.2	-66.4	P	565	0	0	0.5	0.7	0.9
41659	28.1	-41.2	P	650	0	1	0.6	0.0	0.6
41666	38.6	-57.3	P	648	0	1	0.7	0.7	1.0
41907	27.7	-60.9	P	338	0	0	0.7	-0.3	0.8
41910	25.0	-68.1	P	363	0	1	0.6	0.1	0.6
41911	27.1	-63.4	P	400	0	0	0.6	-0.2	0.6
41912	25.6	-66.6	P	28	0	0	0.4	0.0	0.4
41913	24.7	-60.3	P	378	0	0	0.7	-0.1	0.7
41914	25.8	-61.1	P	384	0	1	0.5	0.8	1.0
41916	25.7	-60.5	P	385	0	1	0.6	0.4	0.7
41917	25.3	-64.2	P	379	0	1	0.6	0.1	0.6
42562	14.4	-68.2	P	19	100	100			
42563	15.4	-67.6	P	38	97	97	0.0	4.6	4.6
42564	14.3	-74.9	P	63	100	100			
42565	17.5	-80.7	P	76	100	100			
42566	13.5	-68.8	P	32	100	100			
42567	14.4	-79.4	P	54	100	100			
44546	49.8	-49.6	P	653	0	0	0.9	0.8	1.2
44551	49.4	-39.6	P	637	0	1	0.7	0.3	0.8
44585	41.7	-67.2	P	317	0	25	1.0	1.2	1.5
44603	58.9	-22.9	P	1281	0	46	0.7	0.0	0.7
44605	52.1	-36.7	P	671	0	0	0.7	-0.1	0.7
44606	37.9	-61.9	P	690	0	0	0.7	-0.3	0.7
44608	34.9	-37.7	P	670	0	1	1.1	-0.1	1.1
44609	56.1	-11.7	P	655	0	0	0.7	-0.4	0.8
44611	59.5	-19.6	P	661	0	0	0.6	-0.4	0.7
44613	54.6	-27.6	P	641	0	2	1.2	-0.3	1.3
44614	56.9	-41.2	P	911	0	30	0.9	-0.4	1.0
44615	45.4	-28.1	P	361	0	7	2.7	0.6	2.7
44620	40.1	-22.8	P	13	0	0	0.6	-1.0	1.2
44621	61.6	-35.6	P	635	0	0	0.7	0.2	0.8
44622	54.9	-17.9	P	621	0	0	0.4	-0.3	0.5
44623	30.8	-45.0	P	674	0	0	0.9	0.1	0.9
44626	38.3	-69.8	P	671	0	1	0.9	0.5	1.0
44628	36.5	-36.0	P	704	0	4	0.6	-0.7	0.9

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
44630	37.6	-47.6	P	1049	0	37	0.9	0.6	1.1
44726	62.3	-65.6	P	630	0	55	0.8	-0.2	0.8
44730	58.7	-20.3	P	843	0	53	0.5	2.0	2.1
44742	46.2	-48.7	P	652	0	0	1.1	0.0	1.1
44743	48.8	-47.4	P	634	0	0	1.0	-0.3	1.0
44744	49.6	-44.9	P	684	0	1	1.1	0.4	1.2
44745	53.4	-42.0	P	685	0	0	1.0	-0.2	1.0
44746	56.5	-48.6	P	11	0	0	0.8	-0.3	0.8
44747	52.0	-43.8	P	634	0	0	0.9	-0.7	1.1
44760	56.9	-38.2	P	690	2	10	0.9	-0.2	0.9
44761	54.5	-49.4	P	15	0	0	1.1	-0.2	1.1
44762	55.0	-41.9	P	46	0	0	0.5	0.1	0.5
44764	60.5	-8.7	P	1558	0	58	0.6	-0.3	0.7
44765	46.5	-53.1	P	289	0	0	0.7	-0.6	0.9
44766	51.7	-43.3	P	288	0	0	0.7	-0.3	0.8
44768	58.2	-47.9	P	8	0	0	0.5	-0.3	0.5
44770	50.8	-35.6	P	193	0	25	0.9	-0.6	1.1
44771	45.7	-46.4	P	389	1	28	1.0	-0.5	1.2
44774	36.3	-11.1	P	256	0	14	0.7	0.0	0.7
44777	36.4	-19.5	P	318	0	17	0.5	-0.3	0.6
44778	40.1	-26.9	P	383	0	20	0.5	-0.1	0.5
44779	54.4	-15.6	P	472	0	37	0.6	0.0	0.6
44780	57.0	-42.5	P	676	0	44	0.8	-0.1	0.8
62513	33.5	-17.2	P	680	0	0	0.6	0.5	0.8
62514	34.0	-24.8	P	670	0	1	0.8	0.4	0.9
62515	22.4	-53.4	P	697	0	0	0.7	0.6	0.9
62517	28.1	-31.0	P	680	0	0	0.5	-0.4	0.6
62519	44.8	-5.9	P	679	0	0	0.7	-0.5	0.8
62551	41.2	-24.9	P	928	0	28	0.8	0.2	0.8
62552	35.4	-18.9	P	682	0	0	0.5	0.5	0.7
62553	36.1	-17.8	P	564	0	0	0.5	0.2	0.6
62554	40.3	-15.1	P	616	4	21	3.1	2.1	3.7
62574	47.1	-8.9	P	331	0	0	0.5	0.8	1.0
62598	54.0	-28.8	P	241	0	24	0.8	-0.3	0.8
62711	47.5	-45.0	P	624	0	1	1.1	0.2	1.1
62712	55.2	-35.2	P	1216	0	46	0.7	0.0	0.7
62801	38.3	-20.9	P	650	0	1	0.7	0.5	0.9
62802	34.3	-22.9	P	655	0	0	0.5	-0.4	0.6
62803	46.7	-8.9	P	960	0	45	0.5	-0.4	0.6
62804	47.9	-9.0	P	653	0	1	0.8	-0.5	0.9
64523	64.0	-27.4	P	683	0	4	1.6	0.6	1.7
65597	60.4	-47.0	P	470	0	49	1.5	-0.6	1.6

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
078870	37.4	-23.7	SPEED	1	0	100	0.0	2.4	2.4
086361	37.4	-26.1	SPEED	1	0	100	0.0	-0.4	0.4
135576	36.4	-41.3	SPEED	1	0	100	0.0	-2.1	2.1
13599	20.0	-34.9	SPEED	407	0	100	1.5	-1.9	2.4
13600	17.7	-31.3	SPEED	722	0	100	1.1	-1.1	1.5
13602	17.5	-33.8	SPEED	517	0	100	1.0	-0.9	1.3
178491	34.3	-52.6	SPEED	1	0	100	0.0	4.1	4.1
188390	33.8	-55.1	SPEED	1	0	100	0.0	-2.8	2.8
227201	30.7	-65.4	SPEED	1	0	100	0.0	8.3	8.3
236950	29.9	-67.4	SPEED	1	0	100	0.0	3.6	3.6
41522	22.2	-61.7	SPEED	608	0	100	2.3	0.0	2.3
41532	25.5	-70.3	SPEED	34	0	100	2.6	0.4	2.6
41534	25.1	-64.9	SPEED	196	7	100	1.8	-3.5	3.9
41590	18.0	-61.2	SPEED	603	0	100	1.4	-0.1	1.4
41630	30.5	-73.0	SPEED	416	0	100	1.8	-0.3	1.8
41631	25.6	-74.9	SPEED	74	0	100	4.2	6.7	7.8
41645	26.4	-78.6	SPEED	113	0	100	4.8	4.3	6.5
41646	24.5	-72.4	SPEED	450	0	100	2.0	0.8	2.2
41647	21.4	-73.9	SPEED	499	0	100	2.3	0.7	2.4

41655	22.2	-66.4	SPEED	547	0	100	1.4	-0.2	1.4
41907	27.7	-60.9	SPEED	98	0	100	1.4	4.6	4.8
41910	25.0	-68.1	SPEED	107	0	100	0.9	6.2	6.3
41911	27.1	-63.4	SPEED	112	0	100	1.7	4.0	4.3
41912	25.6	-66.6	SPEED	29	0	100	0.9	4.7	4.8
41913	24.7	-60.3	SPEED	103	0	100	1.7	4.4	4.7
41914	25.8	-61.1	SPEED	93	0	100	1.4	-2.9	3.2
41916	25.7	-60.5	SPEED	108	0	100	1.7	4.3	4.7
41917	25.3	-64.2	SPEED	105	0	100	1.5	4.5	4.8
44546	49.8	-49.6	SPEED	648	0	100	3.8	1.9	4.2
44551	49.4	-39.6	SPEED	583	0	100	2.5	2.0	3.2
44615	45.4	-28.1	SPEED	355	0	100	4.2	-0.9	4.3
44620	40.1	-22.8	SPEED	4	0	100	0.5	-3.2	3.2
62574	47.1	-8.9	SPEED	305	0	100	1.2	-1.0	1.5

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
078870	37.4	-23.7	DIRN.	1	0	0	0.0	-21.4	21.4
086361	37.4	-26.1	DIRN.	1	0	0	0.0	-6.2	6.2
135576	36.4	-41.3	DIRN.	1	0	0	0.0	10.0	10.0
13599	20.0	-34.9	DIRN.	7	0	0	19.9	-20.9	28.8
13600	17.7	-31.3	DIRN.	369	0	0	16.0	13.9	21.2
13602	17.5	-33.8	DIRN.	305	0	0	18.6	21.9	28.7
188390	33.8	-55.1	DIRN.	1	0	0	0.0	-32.7	32.7
236950	29.9	-67.4	DIRN.	1	0	0	0.0	-13.1	13.1
41522	22.2	-61.7	DIRN.	72	3	0	28.1	14.2	31.5
41532	25.5	-70.3	DIRN.	19	0	0	18.2	-53.5	56.5
41534	25.1	-64.9	DIRN.	14	100	0			
41590	18.0	-61.2	DIRN.	105	0	0	20.9	0.6	20.9
41630	30.5	-73.0	DIRN.	218	0	0	26.9	0.8	27.0
41631	25.6	-74.9	DIRN.	40	0	0	20.4	9.1	22.4
41645	26.4	-78.6	DIRN.	69	0	0	12.6	8.0	14.9
41646	24.5	-72.4	DIRN.	153	0	0	29.9	21.7	37.0
41647	21.4	-73.9	DIRN.	135	0	0	18.3	12.3	22.0
41655	22.2	-66.4	DIRN.	118	0	0	18.2	-3.3	18.5
41907	27.7	-60.9	DIRN.	24	0	0	20.5	16.2	26.2
41910	25.0	-68.1	DIRN.	1	0	0	0.0	35.9	35.9
41911	27.1	-63.4	DIRN.	5	0	0	12.4	24.5	27.4
41913	24.7	-60.3	DIRN.	47	0	0	17.1	17.7	24.6
41916	25.7	-60.5	DIRN.	27	0	0	14.0	31.5	34.5
41917	25.3	-64.2	DIRN.	23	0	0	23.4	37.1	43.9
44546	49.8	-49.6	DIRN.	540	0	0	15.1	7.8	17.0
44551	49.4	-39.6	DIRN.	474	0	0	21.3	-13.7	25.4
44615	45.4	-28.1	DIRN.	196	0	0	17.1	6.6	18.3
44620	40.1	-22.8	DIRN.	4	0	0	2.1	-22.4	22.5
62574	47.1	-8.9	DIRN.	283	0	0	9.7	5.6	11.2

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Oct 03

Monitoring procedures:

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :40°N - 70°N, 60°W - 0°W.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored :N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

NB : All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	654	0	9	1.6	0.2	545	0	11	0	8.6	0.2
ACA	1301	0	2	1.6	-0.1	1288	0	3	0	6.8	0.6
AEA	261	0	4	1.7	0.1	138	0	4	0	9.0	-0.7
AEL	271	0	14	2.1	0.4	215	1	13	0	7.5	1.1
AEW	64	0	2	1.7	-0.7	64	0	9	0	11.0	0.7
AFL	425	0	6	1.7	0.4	422	0	6	0	9.8	0.4
AFR	585	1	5	1.5	0.0	482	0	7	0	7.4	0.1
AIS	121	2	10	1.6	0.3	106	2	15	0	11.1	-0.5
AJM	254	0	5	1.5	-0.4	222	0	5	0	5.9	0.1
AMM	85	1	4	1.4	0.2	69	0	7	0	8.3	0.1
AMT	25	0	20	2.4	1.0	27	0	22	0	10.1	-1.0
AMX	268	1	4	1.7	0.3	209	1	8	0	10.7	-1.0
ATN	32	0	100	1.2	0.8	34	0	3	0	7.4	1.1
AUA	24	0	17	3.8	1.8	24	0	0	0	5.3	0.9
AZA	371	6	19	2.9	0.9	315	1	6	0	9.4	-0.2
BAF	28	0	0	1.7	-0.9	28	0	7	0	12.8	0.4
BAL	147	0	16	1.5	0.2	130	0	18	0	8.3	-0.7
BAW	548	1	14	1.6	-0.6	546	0	14	0	7.5	0.2
BPA	95	23	81	5.6	4.5	74	0	15	0	11.2	-1.5
BWA	81	1	6	1.5	-0.5	54	0	7	0	6.6	0.6
CFC	29	0	3	1.5	-0.2	30	0	17	0	10.7	2.3
CFG	370	1	4	1.5	-0.3	322	0	6	0	7.2	-0.2
CKS	169	1	7	1.8	0.4	165	0	8	0	8.0	0.5
CLX	258	1	3	1.8	-0.6	253	0	4	0	7.6	-0.2
COA	99	0	56	1.6	-0.1	62	0	65	0	8.5	-0.1
CRL	165	1	3	1.3	0.4	129	1	5	0	10.5	0.4
CUB	90	1	2	1.7	0.0	69	0	1	0	6.4	0.1
DAL	1159	0	6	1.6	-0.6	968	0	8	0	8.0	0.1
DBR	23	0	4	1.8	-0.7	23	0	4	0	5.5	0.8
DCE	106	0	14	1.7	-1.2	96	0	19	0	11.3	-0.8
DCS	30	0	10	1.2	-0.4	29	0	21	0	13.7	0.6
DHL	119	0	100	6.7	-6.6	120	0	100	0	9.2	0.7
DLH	693	0	10	1.4	0.0	696	1	12	0	7.4	0.6
EDW	51	4	10	1.4	0.0	45	0	11	0	12.7	0.2
EEZ	35	0	17	1.6	0.1	26	0	15	0	6.0	2.5
EIA	321	5	22	3.0	1.5	316	1	100	0	19.5	4.9
EIN	53	0	8	1.7	0.3	51	0	20	0	9.9	0.8
ELY	239	0	4	1.6	0.2	239	0	4	0	5.9	0.3
FDX	711	0	23	1.5	0.1	715	1	25	0	8.8	0.2
FIN	224	0	5	1.7	0.0	220	0	6	0	6.3	0.3
GAF	42	0	5	2.1	-1.4	42	0	5	0	5.1	0.4
GCO	255	0	7	1.3	0.1	253	1	9	0	9.8	0.4
GRL	68	0	3	2.4	1.0	66	0	0	0	5.2	1.5
GTI	151	1	13	1.5	0.4	143	1	15	0	9.4	-0.4
HLN	55	0	2	1.3	-0.8	46	0	4	0	7.1	1.5
IBE	1167	1	7	1.5	0.1	679	0	12	0	9.9	0.3
ICE	713	0	1	1.4	-0.1	707	0	3	0	8.5	0.6
IWD	92	0	9	1.8	-0.1	38	0	8	0	4.7	0.6
JAL	21	0	5	2.2	0.5	21	0	10	0	10.9	1.3
KLM	930	0	2	1.6	0.0	851	0	3	0	7.7	0.6
LDI	210	4	39	4.7	3.1	159	1	7	0	9.7	-0.4
LOT	116	1	3	1.5	-1.0	112	2	6	0	9.5	0.4
LTU	498	1	4	1.4	0.0	403	0	5	0	6.7	0.5
MAS	39	0	3	2.4	1.0	39	0	0	0	5.9	1.0
MKA	24	0	8	1.4	0.9	24	0	17	0	10.8	1.9
MON	61	0	20	3.3	1.7	52	0	8	0	7.6	0.0
MPD	77	0	5	2.1	0.8	40	0	10	0	8.0	1.3
MPH	424	0	2	1.6	-0.8	394	0	3	0	7.4	-0.2
MYT	240	0	4	1.4	0.0	218	0	4	0	7.8	0.2

		TEMPERATURE				WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
NAO	30	0	0	1.2	0.3	31	0	0	0	4.4	0.6
NCA	33	0	0	1.4	0.7	33	0	3	0	6.1	-0.5
NWA	2616	0	2	1.6	0.4	2610	0	3	0	8.1	0.2
OAE	106	1	6	1.2	-0.4	103	0	31	0	17.5	3.2
PAC	243	0	6	1.9	0.1	243	0	7	0	9.0	-0.6
RAM	208	1	4	1.6	0.5	135	0	3	0	7.9	0.5
RCH	305	2	20	3.4	0.2	243	0	16	0	12.4	2.3
RRR	92	9	18	2.4	-0.2	89	0	12	0	8.9	-0.2
RZO	113	0	3	1.4	-0.4	78	0	5	0	7.9	0.6
SEU	77	1	5	1.3	0.2	69	0	4	0	6.2	0.7
SLR	162	2	15	1.3	-0.4	148	1	18	0	8.7	-0.6
SVA	33	3	12	1.9	0.2	34	0	9	0	6.2	0.0
TAP	184	0	6	1.4	0.2	101	0	9	0	7.3	1.4
TSC	150	1	5	1.7	-0.4	138	0	6	0	9.5	1.2
UAL	298	1	49	1.6	-0.7	287	0	55	0	9.4	1.0
UPS	1106	0	47	1.3	0.1	1088	0	48	0	8.4	-0.2
USA	38	3	5	1.0	0.0	29	0	7	0	7.6	0.1
VIR	242	0	3	1.6	-0.1	237	0	4	0	8.5	0.2
WOA	265	0	8	1.3	0.0	253	0	15	0	9.7	0.5

		TEMPERATURE				WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
EU	33856	0	19	1.4	0.3	33856	0	18	0	4.8	0.5
KL	229	0	18	1.4	0.9	228	0	18	0	4.7	0.4
TN	22	0	14	2.9	1.8	23	0	4	0	6.8	1.2

		TEMPERATURE				WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
N	532	0	4	2.1	0.6	524	0	5	0	7.6	1.1
US ACARS	18269	0	37	1.3	0.3	18269	0	27	0	5.1	0.4

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Oct 03

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DASAP3	12	Z	100	4	0	6.3	37.8	37.3
DBBH	00	Z	100	3	0	5.3	28.2	27.7
DBBH	12	Z	100	2	0	9.0	11.4	-7.0
DBLK	12	Z	100	9	0	26.5	30.2	14.4
EBUQ	12	Z	100	16	0	8.6	10.9	-6.6
ELML7	00	Z	100	6	0	5.1	15.1	14.2
ELML7	12	Z	100	7	0	21.3	24.2	11.6
FQFL	00	Z	100	4	0	11.3	27.7	-25.3
FQFL	12	Z	100	5	0	36.0	39.0	15.2
FQFM	00	Z	100	7	0	11.1	20.7	-17.4
FQFM	12	Z	100	7	0	37.4	37.8	-5.3
KHRH	00	Z	100	8	0	7.0	15.8	14.1
KHRH	12	Z	100	7	0	17.0	33.5	28.9
KRPD	00	Z	100	7	0	13.7	20.6	15.4
KRPD	12	Z	100	4	0	5.4	6.9	4.3
LDWR	00	Z	100	27	0	12.5	18.4	-13.6
LDWR	12	Z	100	28	0	11.7	27.2	-24.6
OXVH2	00	Z	100	5	0	12.0	13.3	5.6
OXVH2	12	Z	100	8	0	16.8	17.2	3.8
OXYH2	00	Z	100	2	3	14.0	17.2	-10.0
OXYH2	12	Z	100	6	0	13.8	13.8	-0.7
V2XM	12	Z	100	1	0	0.0	88.0	88.0
WPKD	00	Z	100	12	0	11.8	12.8	5.1
WPKD	12	Z	100	11	0	11.5	13.6	7.3
ZCBP6	00	Z	100	8	0	26.0	39.2	29.4
ZCBP6	12	Z	100	8	0	15.9	36.8	33.1
03953	00	Z	100	27	0	12.3	17.5	12.4
03953	12	Z	100	29	0	15.4	20.4	13.3
04018	00	Z	100	25	0	18.1	19.0	5.6
04018	12	Z	100	29	0	11.1	11.2	1.3
04220	00	Z	100	24	1	13.4	19.0	-13.5
04220	12	Z	100	27	1	17.9	20.3	-9.6
04270	00	Z	100	24	0	17.9	18.3	3.7
04270	12	Z	100	26	0	18.0	18.0	0.2
04339	00	Z	100	25	0	10.6	13.8	-8.9
04339	12	Z	100	29	0	13.8	15.7	-7.5
04360	00	Z	100	24	0	15.8	20.8	13.6
04360	12	Z	100	28	0	19.7	22.4	10.7
08001	00	Z	100	15	0	32.5	33.7	8.6
08001	12	Z	100	24	2	26.0	26.3	-3.6
08508	00	Z	100	25	0	11.9	18.9	14.6
08508	12	Z	100	29	0	15.3	28.3	23.8
08522	00	Z	100	15	0	62.0	70.6	33.7
08522	12	Z	100	26	0	19.6	34.1	27.9
08594	12	Z	100	23	0	31.9	43.5	29.6
71600	00	Z	100	25	0	14.0	17.2	10.0
71600	12	Z	100	29	0	11.5	15.7	10.6
72201	00	Z	100	25	0	12.9	26.0	22.6
72201	12	Z	100	28	0	11.0	40.5	39.0
72402	00	Z	100	25	0	11.3	32.5	30.5
72402	12	Z	100	29	0	14.0	38.6	35.9
74494	00	Z	100	24	0	16.6	18.9	9.0
74494	12	Z	100	29	0	14.5	14.6	1.4
78016	00	Z	100	26	0	8.3	15.1	12.6
78016	12	Z	100	28	0	14.0	33.3	30.3

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Oct 03

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DASAP3	12	Z	500	5	0	13.7	22.5	17.8
DBBH	00	Z	500	3	0	5.1	5.2	1.0
DBBH	12	Z	500	2	0	6.0	8.5	-6.0
DBLK	12	Z	500	9	0	9.1	10.1	4.4
EBUQ	12	Z	500	17	0	6.9	15.7	-14.1
ELML7	00	Z	500	8	0	5.6	11.9	-10.5
ELML7	12	Z	500	7	0	16.7	19.2	-9.6
FQFL	00	Z	500	7	0	45.9	46.0	1.6
FQFL	12	Z	500	9	0	15.2	19.9	-12.8
FQFM	00	Z	500	8	0	5.8	14.3	-13.1
FQFM	12	Z	500	9	0	26.1	31.0	-16.7
KHRH	00	Z	500	8	0	8.4	13.3	-10.3
KHRH	12	Z	500	7	0	12.4	12.4	-0.3
KRPD	00	Z	500	8	0	13.6	14.9	6.1
KRPD	12	Z	500	5	0	6.8	7.3	2.6
LDWR	00	Z	500	27	0	6.7	6.9	-1.3
LDWR	12	Z	500	28	0	9.5	9.8	-2.2
OXVH2	00	Z	500	5	0	8.7	9.0	2.4
OXVH2	12	Z	500	9	0	16.5	17.8	6.8
OXYH2	00	Z	500	3	3	6.1	6.4	1.7
OXYH2	12	Z	500	6	0	8.1	8.4	2.3
V2XM	12	Z	500	4	0	16.5	16.5	0.8
WPKD	00	Z	500	13	0	7.2	10.3	-7.4
WPKD	12	Z	500	12	0	7.7	8.8	-4.3
ZCBP6	00	Z	500	8	0	19.2	34.1	28.1
ZCBP6	12	Z	500	8	0	9.7	29.8	28.1
03953	00	Z	500	27	0	8.2	8.3	-0.7
03953	12	Z	500	29	0	5.6	6.7	3.7
04018	00	Z	500	25	0	9.3	10.9	5.6
04018	12	Z	500	29	0	10.2	10.7	3.1
04220	00	Z	500	24	1	9.0	10.7	5.8
04220	12	Z	500	27	1	8.0	9.1	4.5
04270	00	Z	500	25	0	8.1	10.0	5.9
04270	12	Z	500	29	0	12.7	13.2	3.6
04339	00	Z	500	25	0	8.4	9.0	3.3
04339	12	Z	500	29	0	11.9	13.0	5.3
04360	00	Z	500	24	0	13.6	16.5	9.4
04360	12	Z	500	28	0	11.9	14.7	8.6
08001	00	Z	500	22	0	18.1	18.2	-1.8
08001	12	Z	500	25	2	15.7	17.5	-7.8
08508	00	Z	500	25	0	7.3	10.9	-8.1
08508	12	Z	500	29	0	7.8	9.7	-5.8
08522	00	Z	500	17	0	8.6	9.2	-3.2
08522	12	Z	500	28	0	7.4	7.4	-0.5
08594	12	Z	500	23	0	7.9	8.5	3.1
71600	00	Z	500	27	0	10.2	11.4	-5.1
71600	12	Z	500	29	0	12.8	14.2	-6.2
72201	00	Z	500	27	0	5.6	5.9	-1.6
72201	12	Z	500	29	0	6.2	6.2	0.2
72402	00	Z	500	27	0	5.5	5.5	0.2
72402	12	Z	500	29	0	10.5	10.6	1.5
74494	00	Z	500	27	0	7.1	9.3	-6.0
74494	12	Z	500	29	0	6.9	9.3	-6.2
78016	00	Z	500	26	0	6.6	6.6	0.4
78016	12	Z	500	29	0	9.5	11.1	5.7

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Oct 03

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
GROSS ERROR LIMITS	:Defined in Appendix I.2	

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DASAP3	12	V	100	4	0	0	5.7	0.3	1.0
DBBH	00	V	100	3	0	0	2.6	-0.2	-0.8
DBBH	12	V	100	2	0	0	2.5	1.5	-1.3
DBLK	12	V	100	9	0	0	4.2	1.9	1.7
EBUQ	12	V	100	14	0	0	5.3	-0.2	-0.2
ELML7	00	V	100	5	0	0	5.8	-0.1	3.5
ELML7	12	V	100	6	0	0	4.0	-0.1	1.6
FQFL	00	V	100	3	0	0	5.6	2.8	0.7
FQFL	12	V	100	6	0	0	4.0	2.4	0.5
FQFM	00	V	100	7	0	0	3.3	2.4	-0.7
FQFM	12	V	100	7	0	0	3.4	-1.0	-0.1
KHRH	00	V	100	7	0	0	5.5	-0.9	-0.4
KHRH	12	V	100	5	0	0	5.0	1.6	0.0
KRPD	00	V	100	4	1	0	9.6	-2.5	5.2
KRPD	12	V	100	2	0	0	10.8	-8.8	2.0
LDWR	00	V	100	27	0	0	2.7	0.0	-0.1
LDWR	12	V	100	28	0	0	3.0	0.4	0.9
OXVH2	00	V	100	5	0	0	4.3	0.2	-2.0
OXVH2	12	V	100	7	0	0	3.0	-0.3	-0.7
OXYH2	00	V	100	3	0	0	8.5	1.8	-3.3
OXYH2	12	V	100	2	0	0	2.6	0.8	0.2
V2XM	12	V	100	1	0	0	1.1	-1.1	-0.3
WPKD	00	V	100	9	0	0	4.5	-0.7	1.4
WPKD	12	V	100	9	0	0	4.1	-0.5	0.7
ZCBP6	00	V	100	3	0	0	4.9	1.6	0.6
ZCBP6	12	V	100	7	0	0	4.9	1.4	1.2
03953	00	V	100	27	0	0	3.1	-0.4	1.1
03953	12	V	100	29	0	0	2.9	0.9	0.0
04018	00	V	100	24	0	0	3.0	0.1	-0.7
04018	12	V	100	29	0	0	3.6	0.3	-0.2
04220	00	V	100	25	0	0	3.1	-0.3	-0.4
04220	12	V	100	27	0	0	3.3	0.1	-0.2
04270	00	V	100	24	0	0	6.8	-0.9	-0.4
04270	12	V	100	26	0	0	6.2	-0.7	0.0
04339	00	V	100	18	0	5	6.8	-0.7	0.0
04339	12	V	100	28	0	0	4.2	0.4	-0.3
04360	00	V	100	24	0	0	4.0	0.6	-0.6
04360	12	V	100	27	0	3	6.3	-0.7	0.5
08001	00	V	100	14	0	0	4.4	0.4	1.1
08001	12	V	100	19	0	0	4.8	0.7	0.4
08508	00	V	100	14	0	0	4.3	0.2	-1.0
08508	12	V	100	17	0	0	3.6	0.9	-0.1
08522	00	V	100	14	0	0	3.2	1.0	0.2
08522	12	V	100	25	0	0	4.9	1.8	1.0
08594	12	V	100	23	0	100	7.2	-2.5	4.0
71600	00	V	100	25	0	0	4.8	-1.5	0.9
71600	12	V	100	29	0	0	4.1	-0.5	-0.5
72201	00	V	100	25	0	0	2.6	0.4	-0.1
72201	12	V	100	28	0	0	2.9	-0.2	-0.5
72402	00	V	100	24	0	0	3.7	0.2	0.1
72402	12	V	100	29	0	0	4.1	-0.4	0.2
74494	00	V	100	23	0	0	4.3	-1.9	0.0
74494	12	V	100	29	0	0	4.0	-1.3	0.7
78016	00	V	100	24	0	0	5.1	-0.2	0.1
78016	12	V	100	28	0	0	5.0	-0.7	0.2

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Oct 03

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS:	Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DASAP3	12	V	500	5	0	0	3.1	-0.4	1.6
DBBH	00	V	500	3	0	0	4.7	-0.8	-0.6
DBBH	12	V	500	2	0	0	4.8	2.0	3.3
DBLK	12	V	500	9	0	0	5.1	0.6	2.7
EBUQ	12	V	500	16	0	0	4.2	0.5	-1.3
ELML7	00	V	500	7	0	0	4.1	0.7	0.1
ELML7	12	V	500	6	0	16	6.9	1.7	1.7
FQFL	00	V	500	7	0	0	5.3	0.6	2.1
FQFL	12	V	500	10	0	10	8.6	1.9	1.8
FQFM	00	V	500	8	0	0	4.1	0.7	-1.7
FQFM	12	V	500	9	0	0	3.6	-1.6	0.2
KHRH	00	V	500	5	0	0	2.8	0.8	-1.3
KHRH	12	V	500	5	0	0	2.8	0.3	1.0
KRPD	00	V	500	5	0	0	10.4	-5.0	1.1
KRPD	12	V	500	4	0	0	11.0	-4.6	1.7
LDWR	00	V	500	27	0	0	3.1	1.1	-0.8
LDWR	12	V	500	28	0	0	4.2	-0.3	0.0
OXVH2	00	V	500	5	0	20	10.1	-0.6	-3.6
OXVH2	12	V	500	9	0	0	3.3	1.0	-0.6
OXYH2	00	V	500	4	0	0	6.3	-4.5	-0.4
OXYH2	12	V	500	3	0	33	26.8	18.1	-4.4
V2XM	12	V	500	4	0	0	5.9	-0.8	-3.7
WPKD	00	V	500	11	0	9	11.2	-0.1	2.8
WPKD	12	V	500	11	0	9	11.4	0.9	-2.2
ZCBP6	00	V	500	4	0	0	2.7	-0.6	1.2
ZCBP6	12	V	500	8	0	0	4.1	0.2	0.3
03953	00	V	500	27	0	0	4.0	0.2	0.1
03953	12	V	500	29	0	0	3.9	0.7	1.2
04018	00	V	500	24	0	0	4.1	0.9	-0.5
04018	12	V	500	29	0	0	4.1	0.0	-0.4
04220	00	V	500	25	0	0	4.4	-0.5	-0.2
04220	12	V	500	28	0	0	4.3	-0.3	-0.6
04270	00	V	500	25	0	0	5.0	-0.5	-1.1
04270	12	V	500	29	0	0	4.6	0.0	-1.0
04339	00	V	500	20	0	10	7.8	2.0	-0.7
04339	12	V	500	29	0	0	6.0	0.2	-0.6
04360	00	V	500	24	0	0	3.7	0.0	-0.9
04360	12	V	500	28	0	0	4.8	-0.7	0.1
08001	00	V	500	22	0	0	4.4	0.5	0.0
08001	12	V	500	23	0	0	4.6	0.3	-1.3
08508	00	V	500	15	0	0	3.5	-0.8	0.6
08508	12	V	500	17	0	0	4.0	0.0	-0.6
08522	00	V	500	16	0	0	3.9	0.1	1.0
08522	12	V	500	28	0	0	4.5	1.4	1.1
08594	12	V	500	22	1	100	4.3	-1.0	-1.1
71600	00	V	500	27	0	3	7.1	-0.8	-0.6
71600	12	V	500	29	0	0	5.0	-0.7	0.6
72201	00	V	500	27	0	0	2.7	0.5	-0.2
72201	12	V	500	29	0	0	3.3	-0.6	-1.4
72402	00	V	500	26	0	0	3.6	0.4	0.5
72402	12	V	500	29	0	0	3.8	0.2	0.0
74494	00	V	500	27	0	0	3.7	-1.8	-0.5
74494	12	V	500	29	0	0	3.4	-0.8	0.4
78016	00	V	500	26	0	0	5.0	-0.3	-1.4
78016	12	V	500	29	0	0	4.4	0.0	0.3

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45